Panasonic

Audio Mixer
Operating Instructions

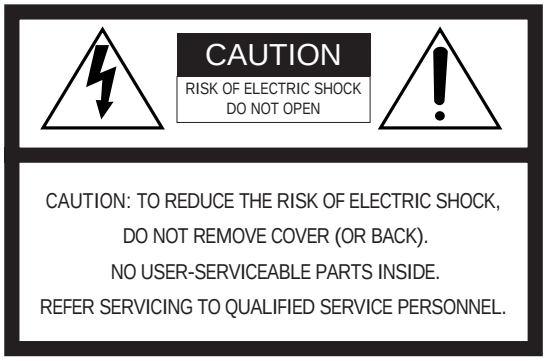
Model No. WR-XS3

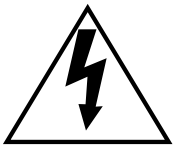
RAMSA

Before attempting to connect or operate this product,
please read these instructions carefully and save this manual for future use.

Caution:

Before attempting to connect or operate this product, please read the label on the bottom.


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



SA 1965

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

SA 1966

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Power disconnection. Unit with or without ON-OFF switches have power supplied to the unit whenever the power cord is inserted into the power source; however, the unit is operational only when the ON-OFF switch is in the ON position. The power cord is the main power disconnect for all units.

For U.S.A

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.
Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FCC Caution: To assure continued compliance, (example - use only shielded interface cables when connecting to computer or peripheral devices). Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

The serial number of this product may be found on the bottom of the unit.
You should note the serial number of this unit in the space provided and retain this book as a permanent record of your purchase to aid identification in the event of theft.

Model No. WR-XS3

Serial No. _____

The model numbers in these Operating Instructions are given without suffix.

WARNING:
To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture.

(Except for U.S.A. and Canada)

We declare under our sole responsibility that the product to which this declaration relates is in conformity with the standards or other normative documents following the provisions of Directives EEC/73/23 and EEC/89/336.

Wir erklären in alleiniger Verantwortung, daß das Produkt, auf das sich diese Erklärung bezieht, mit der folgenden Normen oder normativen Dokumenten übereinstimmt. Gemäß den Bestimmungen der Richtlinie 73/23/EEC und 89/336/EEC.

Nous déclarons sous note seule responsabilité que le produit auquel se réfère la présente déclaration est conforme aux normes ou autres documents normatifs conformément aux dispositions des directives CEE/73/23 et CEE/89/336.

Nosotros declaramos bajo nuestra única responsabilidad que el producto a que hace referencia esta declaración está conforme con las normas u otros documentos normativos siguiendo las estipulaciones de las directivas CEE/73/23 y CEE/89/336.

Noi dichiariamo sotto nostra esclusiva responsabilità che il prodotto a cui si riferisce la presente dichiarazione risulta conforme ai seguenti standard o altri documenti normativi conformi alle disposizioni delle direttive CEE/73/23 e CEE/89/336.

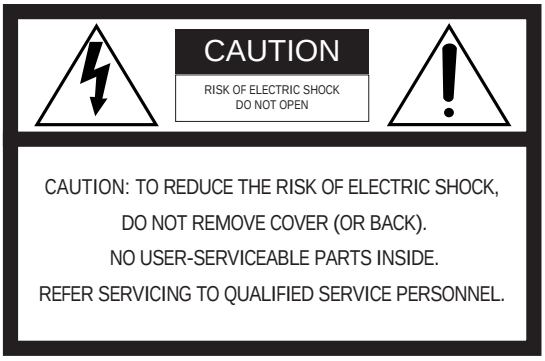
Vi erklærer os eneansvarlige for, at dette produkt, som denne deklaration omhandler, er i overensstemmelse med standarder eller andre normative dokumenter i følge bestemmelserne i direktivene 73/23/EEC og 89/336/EEC.

Vi deklarerar härmed värt fulla ansvar för att den produkt till vilken denna deklaration hänvisar är i överensstämmelse med standarddokument, eller andra normativa dokument som framställs i EEC-direktiv nr. 73/23 och 89/336.

Ilmoitamme yksinomaisella vastuullamme, että tuote, jota tämä ilmoitus koskee, noudattaa seuraavia standardeja tai muita ohjeellisia asiakirjoja, jotka noudattavat direktiivien 73/23/EEC ja 89/336/EE. säädöksiä.

Vi erklærer oss alene ansvarlige for at produktet som denne erklæringen gjelder for, er i overensstemmelse med følgende normer eller andre normgivende dokumenter som følger bestemmelsene i direktivene 73/23/EEC og 89/336/EEC.

Wij verklaren als enige aansprakelijke, dat het product waarop deze verklaring betrekking heeft, voldoet aan de volgende normen of andere normatieve documenten, overeenkomstig de bepalingen van Richtlijnen 73/23/EEC en 89/336/EEC.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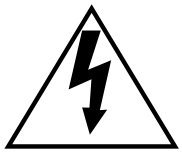

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Model No. WR-XS3

Serial No. _____

FOR YOUR SAFETY PLEASE READ THE FOLLOWING TEXT CAREFULLY.

WARNING: This apparatus must be earthed.

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code.

Green-and-yellow:	Earth
Blue:	Neutral
Brown:	Live

As the colours of the wire in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows.

The wire which is coloured **green-and-yellow** must be connected to the terminal in the plug which is marked with the letter **E** or by the earth symbol ⏚ or coloured **green** or **green-and-yellow**.

The wire which is coloured blue must be connected to the terminal in the plug which is marked with the letter **N** or coloured **black**.

The wire which is coloured **brown** must be connected to the terminal in the plug which is marked with the letter **L** or coloured **red**.

The model numbers in these Operating Instructions are given without suffix.

WARNING:
To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture.

IMPORTANT SAFETY INSTRUCTIONS

1) Read these instructions.

2) Keep these instructions.

3) Heed all warnings.

4) Follow all instructions.

5) Do not use this apparatus near water.

6) Clean only with dry cloth.

7) Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.

8) Do not use near any heat sources such as radiators, heat registers, stoves or other apparatus (including amplifiers) that produce heat.

9) Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

10) Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles and the points where they exit from the apparatus.

11) Only use attachments/accessories specified by the manufacturer.

12) Use only with the cart, stand, tripod, bracket or table specified by the manufacturer or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-overs.

13) Unplug this apparatus during lightning storms or when unused for long periods of time.

14) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

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PREFACE

This audio mixer has four mono input lines, four stereo input lines, one mono/stereo input line and three output lines.

FEATURES

● Three modes applicable to different amplification systems

DIP switches at the rear panel support the following amplification systems:

- Mode 1: One-circuit amplification (stereo: 1 and mono: 1)
- Mode 2: Two-circuit amplification (stereo: 1 or mono: 1)
- Mode 3: Three-zone amplification (stereo: 1 and mono :2)

● Integrated level control of microphone sounds or BGM

The mono or stereo output level is adjustable with one knob: the MONO OUT or STEREO OUT knob.

● Customizable amplification systems

- The SUB OUTPUT connector can be assigned to a desired input line from among the STEREO INPUT jack 1 to 4, the connectors MONO INPUT 1 to 4, and the MULTI IN STEREO/MONO jack. Refer to p. 18 Output Line Setting for SUB OUTPUT for details.
- The MULTI INPUT* ST and the MULTI INPUT MONO jacks serve as additional stereo or mono input lines, as they can be assigned to any output line.
- The LINE IN* jack at the front panel can be connected to a personal computer, MD player or CD player.

* The signal from MULTI INPUT ST/MONO jack(s) and the LINE IN jack are unavailable at the same time. (The LINE IN jack has a priority to MULTI IN.)

● Basic functions

- Head amplifier with discrete construction (mono input)
- Electronically balanced output circuit
- Design for noise reduction and sound quality improvement (Refer to p. 38 SPECIFICATIONS.)
- Stereo input auto mute switch, used for information broadcasting in a shop
- Acrylic cover is attachable on the front panel to prevent wrong operation.

Note: In these Operating Instructions, "Mono" and "mono" stand for "monophonic".

PRECAUTIONS

- **Refer all work related to installation of this product to qualified service personnel or system installers.**

- **Turning On the Power**
  Turn on the unit before the amplifier is turned on.

- **Turning Off the Power**
  Turn off the amplifier first, and then turn off the unit.

- **Connection**
  Switch off the amplifier, the unit and any other devices before connection to prevent speaker damage.

- **Do not attempt to disassemble the appliance.**
  To prevent electric shock, do not remove screws or covers.
  There are no user-serviceable parts inside. Refer maintenance to qualified service personnel.

- **Handle the appliance with care.**
  Do not strike or shake, as this may damage the appliance.

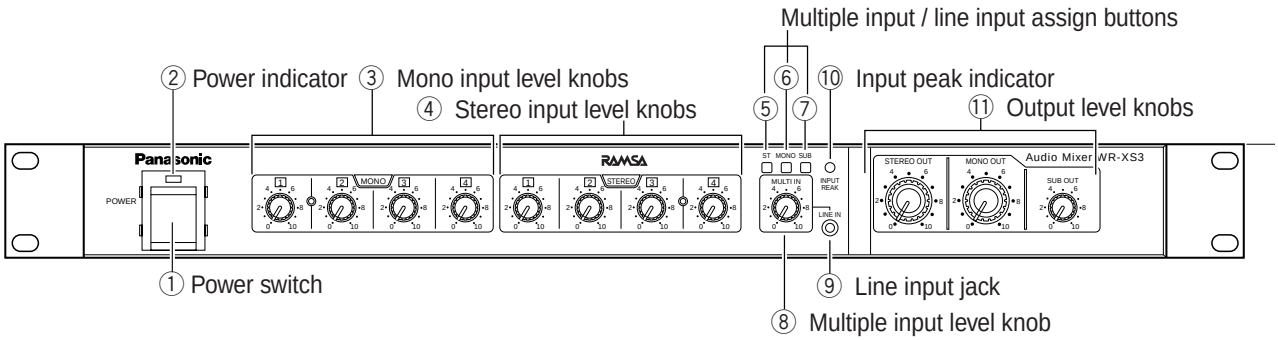
- **Do not expose the appliance to water or moisture, nor try to operate in wet water.**
  Do take immediate action if the appliance becomes wet. Turn the power off and refer servicing to qualified service personnel. Moisture can damage the appliance and also cause electric shock.

- **Do not use strong abrasive detergent when cleaning the appliance body.**
  Use a dry cloth to clean the appliance when it is dirty. When the dirt is hard to remove, use a mild detergent and wipe it gently.

- **Do not operate the appliance beyond its specified temperature, humidity or power source ratings.**
  Do not use the appliance in an extreme environment where high temperature or high humidity exists.
  Use the appliance at temperatures within 0 °C - +45 °C (32 °F - 113 °F) and a humidity below 90 %.
  The input power source for WR-XS3 is 120 V AC, 60 Hz or 220 - 240 V AC, 50 Hz.*
  * Power supply is not switchable but conformed to your area.

MAJOR OPERATING CONTROLS AND THEIR FUNCTIONS

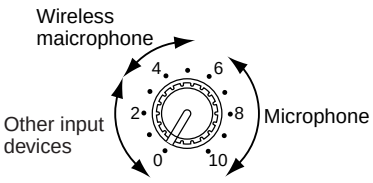
■ Front View



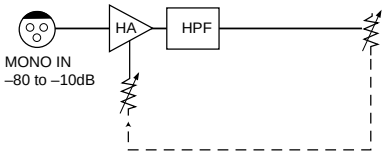
① **Power switch [POWER]**
Toggles the power on and off.

② **Power indicator**
Lights up when the power switch is set to ON.

③ **Mono input level knobs [MONO 1 to 4]**
Monaural input levels are adjustable with these knobs corresponding widely to the connected devices, e.g., from microphones up to line-level source devices.



Input gains are in conjunction with output gains. (Dual-level control)



Note: When using Panasonic wireless microphones, set the output level to –20 dB.

④ **Stereo input level knobs [STEREO 1 to 4]**
Stereo input levels are adjustable with these knobs corresponding widely to the connected devices, e.g., from microphones up to line-level source devices.

⑤ **Stereo output assign button [ST]**
Assigns the signal inputs of the MULTI INPUT ST jack, MULTI INPUT MONO connector, and LINE IN to STEREO OUT jacks.
ON (▂): These inputs are assigned to the STEREO OUTPUT jack.
OFF(▇): These inputs are not assigned to the STEREO OUTPUT jack.

⑥ **Monaural output assign button [MONO]**
Assigns the signal inputs of the MULTI INPUT ST jack, the MULTI INPUT MONO connector, and the LINE IN jack to MONO OUTPUT jack.
ON (▂): These inputs are assigned to MONO OUTPUT jack.
OFF(▇): These inputs are not assigned to MONO OUTPUT jack.

⑦ **Sub output assign button [SUB]**
Assigns the signal inputs of the MULTI IN STEREO jacks, the MULTI INPUT MONO connector, and the LINE IN jack to SUB OUTPUT jack.
ON (▂): These inputs are assigned to SUB OUTPUT jack.
OFF (▇): These inputs are not assigned to SUB OUTPUT jack.

⑧ **Multiple input level knob [MULTI IN]**
Multiple input level is adjustable corresponding widely to the connected device.

⑨ **Line input jack [LINE IN]**
Connects to an input device such as a CD player, MD player or tape recorder.

Stereo/mono: 1 circuit
Output jack: Stereo mini jack
Input level: –10 dB
Impedance: 10 kΩ, unbalanced

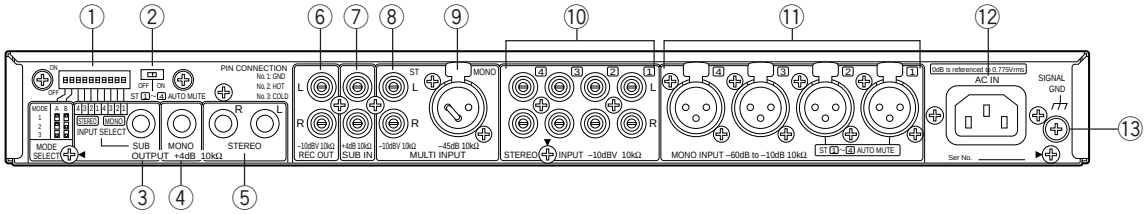
⑩**Input peak indicator [INPUT PEAK]**
Lights up when any input signal reaches –3 dB (from the MONO INPUT 1 to 4 connectors, the STEREO INPUT 1 to 4 jacks , the MULTI INPUT ST connectors, the MULTI INPUT MONO connector and the LINE IN jack) above the clip level.

⑪ **Output level knobs**
[STEREO OUT]
Turning to the left will lower the stereo output level.
Turning to the right will raise the output level.

[MONO OUT]
Turning to the left will lower the mono output level.
Turning to the right will raise the mono output level.

[SUB OUT]
Turning to the left will lower the sub output level.
Turning to the right will raise the output level.

■ Rear View



① **DIP switches**
Switches A and B select the unit mode from among mode 1, 2 and 3.
Switches MONO 1 to 4 and STEREO 1 to 4 assign any input lines to SUB OUTPUT jack.
Refer to pp. 15 to 18.

② **Stereo input auto mute switch [ST 1- 4 AUTO MUTE]**
Selects the auto mute setting when an input signal is accepted via the MONO INPUT connector 1 or 2. Auto mute is applicable to information broadcasting with BGM in a shop.
ON (▂): The volume(s) of the STEREO INPUT 1 to 4 jacks are automatically muted.
OFF (▇): The volume(s) of the STEREO INPUT 1 to 4 jacks are not automatically muted.

Mute level: 9 dB

③ **Sub output jack [SUB OUTPUT]**
Transmits a signal from a desired input line (from among the STEREO INPUT 1 to 4 jacks, the MONO INPUT 1 to 4 connectors, or the MULTI INPUT ST jacks) which is mixed by the unit.

Mono: 1 circuit
Output jack: TRS jack electronic balanced
Output level: +4 dB
Impedance: 10 kΩ

④ **Mono output jack [MONO OUTPUT]**
Transmits a mono signal mixed by the unit.

Mono: 1 circuit
Output jack: TRS jack electronic balanced
Output level: +4 dB
Impedance: 10 kΩ

⑤ **Stereo output jacks [STEREO OUTPUT L/R]**
These jacks transmit a stereo signal mixed by the unit.

Stereo: 1 circuit
Output jack: TRS jack electronic balanced
Output level: +4 dB
Impedance: 10 kΩ

⑥ **Recording output jacks [REC OUT L/R]**
These jacks connect to a recording device such as a stereo cassette recorder or MD recorder.

Stereo: 1 circuit
Output jack: RCA type pin jack unbalanced
Output level: –10 dBV
Impedance: 10 kΩ

⑦ **Sub input jacks [SUB IN L/R]**
These jacks receive output signals from sub mixer, etc. The signals input to these connectors are output through the STEREO OUTPUT jack.

Stereo: 1 circuit
Input jack: RCA type pin jack unbalanced
Input level: +4 dB
Impedance: 10 kΩ

⑧ **Multiple stereo input jacks [MULTI INPUT ST L/R]**
These jacks connect to audio-visual devices such as a CD player and tape recorder.

Stereo: 1 circuit
Input jack: RCA type pin jack unbalanced

Input level: –10 dBV
Impedance: 10 kΩ

⑨ **Multiple mono input connector [MULTI INPUT MONO]**
Connects a microphone. When using this connector, remove the short pin.

Mono: 1 circuit
Input connector: XLR-3-31 type balanced
Input level: –45 dB
Impedance: 10 kΩ

⑩ **Stereo input jacks [STEREO INPUT L/R 1 - 4]**
These XRL connectors receive input signals from up to 4 audio-visual devices such as a CD player and tape recorder.

Stereo: 4 circuits
Input jack: PIN jack unbalanced
Input level: –10 dBV
Impedance: 10 kΩ

⑪ **Mono input connectors [MONO INPUT 1 - 4]**
These XLR connectors receive input signals from up to 4 microphones or other input devices.

Mono: 4 circuits
Input connector: XLR-3-31 type balanced
Input level: –10 dB to –60 dB
Impedance: 10 kΩ

⑫ **AC inlet socket [AC IN]**
To use the unit, plug the power cord (supplied as a standard accessory) into this socket and connect it to an AC receptacle.

⑬ **Grounding screw [SIGNAL GND]**

Notes:

- An RCA type pin plug cable is recommended for connection between the unit and a CD player through the MULTI INPUT ST jacks or the STEREO INPUT 1 - 4 jacks. Use RCA type pin jacks to connect external devices when the devices have both of RCA and XLR type pin jacks.
- When using a condenser microphone, connect it to an external device.
- Do not connect external devices supplying phantom power, as it may damage the unit.

INSTALLATION

■ Work Flow

System Configuration

Decide what kind of system to form. Determine the number of the external devices, the connection form, and the mode (p. 14 Unit Modes and Signal Flow).

⬇

Connections

Connect the components to the unit.

⬇

Settings

Configure the following settings:
- Modes (pp. 14 to 17)
- Input line assignment (if using the SUB OUT jack) (p. 18)
- Output line assignment to MULTI IN/LINE IN.(p. 19)

⬇

Sticking a Label (p. 26)

Stick the supplied label on each component.

⬇

Adjusting the Input and Output Levels (pp. 29 to 31)

Adjust the input and output levels with the knobs on the front panel.

⬇

Attaching/detaching the acrylic cover (p. 28)

Attach the acrylic cover on the unit front panel to prevent wrong operation.

■ Before Installation

Caution:

Contact your dealer for installing the unit.
Be sure to toggle the power off and unplug the unit from the receptacle before installation. Follow the safety instructions.

● Power Connection

Connect the power cord by any of the following methods, making sure to provide a breaking device in each case.

(1) Connect the power cord to the power control unit.
(2) Install the unit near a receptacle and connect the power cord to the receptacle via a breaking device. The breaking device should be installed near an operator.
(3) Connect the power cord to a circuit breaker in a panel board that has a contact distance of 3.0 mm or more. Use a circuit breaker that will interrupt each circuit of the main power supply (except a ground-protective conductor).

● Installation Place

- Install the unit out of direct sunlight and away from outlets of heated air. Installation in a humid, dusty or shaky place may cause trouble.
- Keep a distance between this unit and a transformer, dimmer, image device, CRT monitor, etc. as much as possible. Failure to do this may cause induction noise.

● Rack Mounting

Keep the temperature in the rack below 45 °C . Failure to do this may cause damage to internal components.

● Grounding the Unit

Ground the unit by the grounding terminal at the rear side.
If the devices are connected in unbalanced connections, synchronize each grounding potential as follows:
- Synchronize the power supply phases.
- Synchronize the power supply lines.
- Connect each device's grounding terminal or chassis with a thick grounding wire of each device.

Failure to do this may cause induction noise.

Note: If the unit is placed more than 10 m away from other external devices, grounding the unit near an unbalanced external device is recommended.

● Condenser Microphone

- When using a condenser microphone, connect it to an external device.
- Do not connect external devices supplying phantom power, as it may damage the unit.

■ Mounting into the Rack

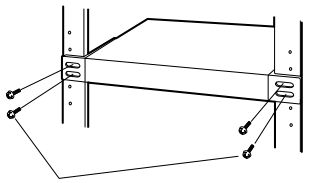
● Rack

Use either one of the following racks for mounting the unit.

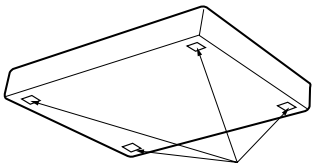
Standard:	WU-RS71, capacity of 29 U (Panasonic)
Long:	WU-RL76, capacity of 41 U (Panasonic)
EIA standard-compliant:	depth 450 mm or more (other than Panasonic)

● Items to prepare

If you use a rack supplied by other than Panasonic, it may require four rack mounting screws (option) or four M5 x 12 screws. (If you use a Panasonic rack, you can use the tapping screws supplied with the rack.)

Where to install	How to install
1. Install the unit on a rack.	Secure the unit by 4 pieces of rack mounting screws (M5 x 12) in the accessories.  Apply the screws in the accessories.

Note: Attach the four rubber feet if not installing the unit in a rack.



Attach 4 rubber feet.

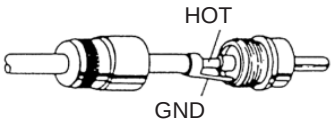
Cautions:

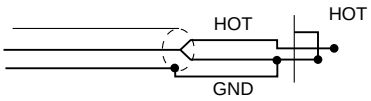
- When mounting this unit in a place where it is frequently subject to vibrations, secure its rear to the rack with reinforcing angle steel (manufactured locally) or other materials.
- Keep the temperature in the rack below 45°C.
- Place this unit below heat-producing devices such as amplifiers if possible.
- If placing the unit below and above heat-producing devices such as amplifiers cannot be avoided, keep a distance of 1 U or above the heat-producing devices.
- Use the rack mounting screws (nominal diameter: 5 x 12) supplied with the brackets if the mounting positions of the rack are not tapped. If the screws are used at tapped positions of the rack, the original threads may be destroyed.
- The rack mounting screws in the accessories do not fit all types of racks. In that case, use the screws included with the rack or buy your own screws.

■ Cable Information

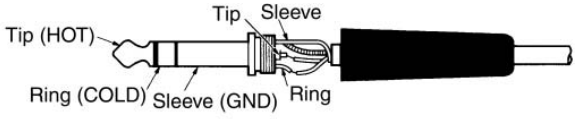
The usable cable types, plugs, and connectors are the following.
Before connection, sure you are using the proper cables.

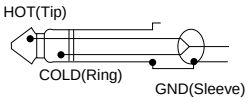
● Pin plug



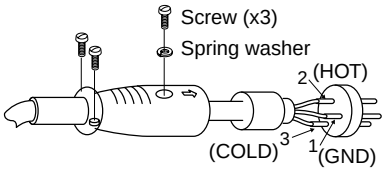


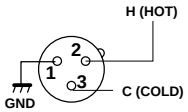
● Tip-ring-sleeve (TRS) phone plug





● XLR connector (XLR3-12 type)





Caution:

No.2 pin of the XLR connector of this unit is hot. When connecting a device whose No.3 is hot, connect No.2 pin (No.3 pin) of this unit to No.3 pin (No. 2 pin) of the device.

Notes:

- Be sure to use shielded wire for audio input/output lines.
- Use a cable of less than 10 m length for a high-impedance microphone. High-pass loss can occur if the cable capacity is insufficient.
  Use a cable less than 50 m when using a low-impedance microphone (150 Ω, 250 Ω or 600 Ω).
- Keep speaker lines away from input lines. Failure to do this may cause unstable operation and shaking.

SETUP PROCEDURES

After connecting the external devices, do the following procedures:

- Mode setting
- Input signal assignment to the SUB OUTPUT jack
- Output signal assignment to the LINE IN jack, MULTI INPUT ST jacks, or MULTI INPUT MONO connector.

■ Unit Modes and Signal Flow

This unit has three modes. Set the suitable mode with DIP switch for the desired broadcasting system.

● Mode 1

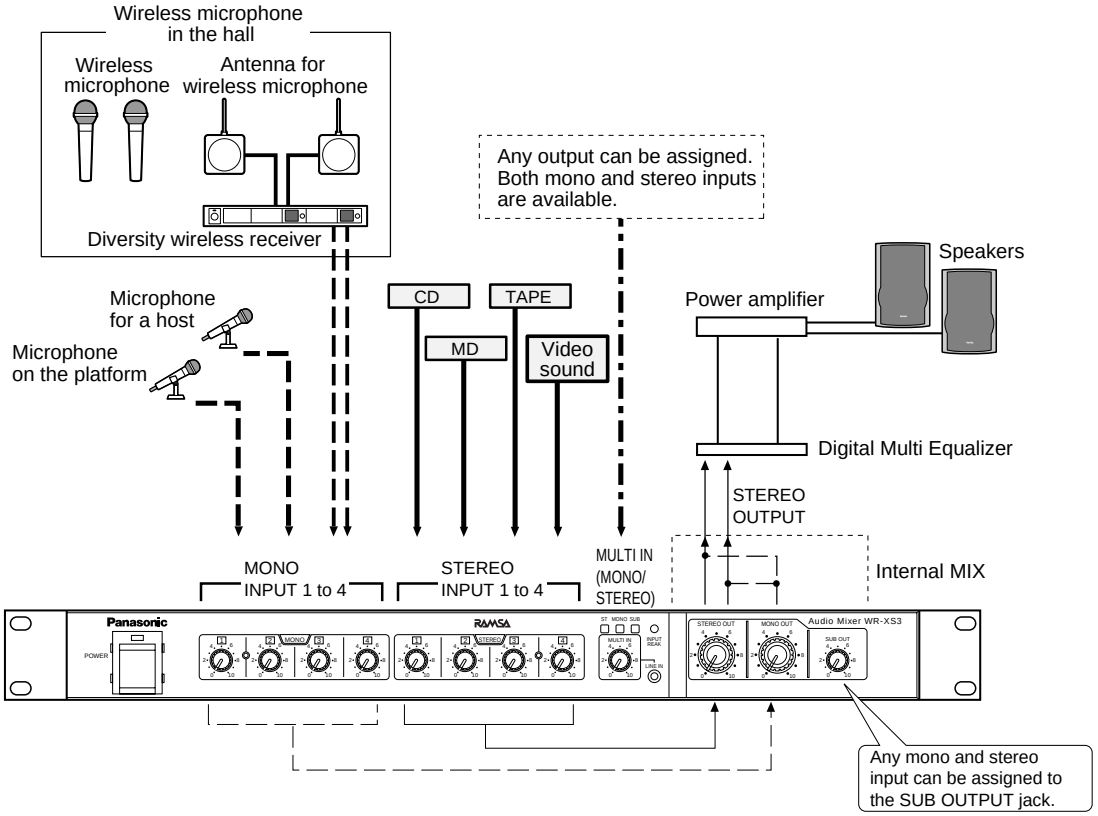
Stereo or monaural amplification are applicable in Mode 1.
The stereo and mono input signals are mixed for output.

Stereo amplification

After the signals from stereo and mono input lines are mixed, they are output through the STEREO OUT jack toward one zone.

Output jack(s) connecting the amplifier or speakers determine(s) the output line.
The mode is determined with Switch A and B of the DIP switches. (Refer to the next page.)

Signal Flow



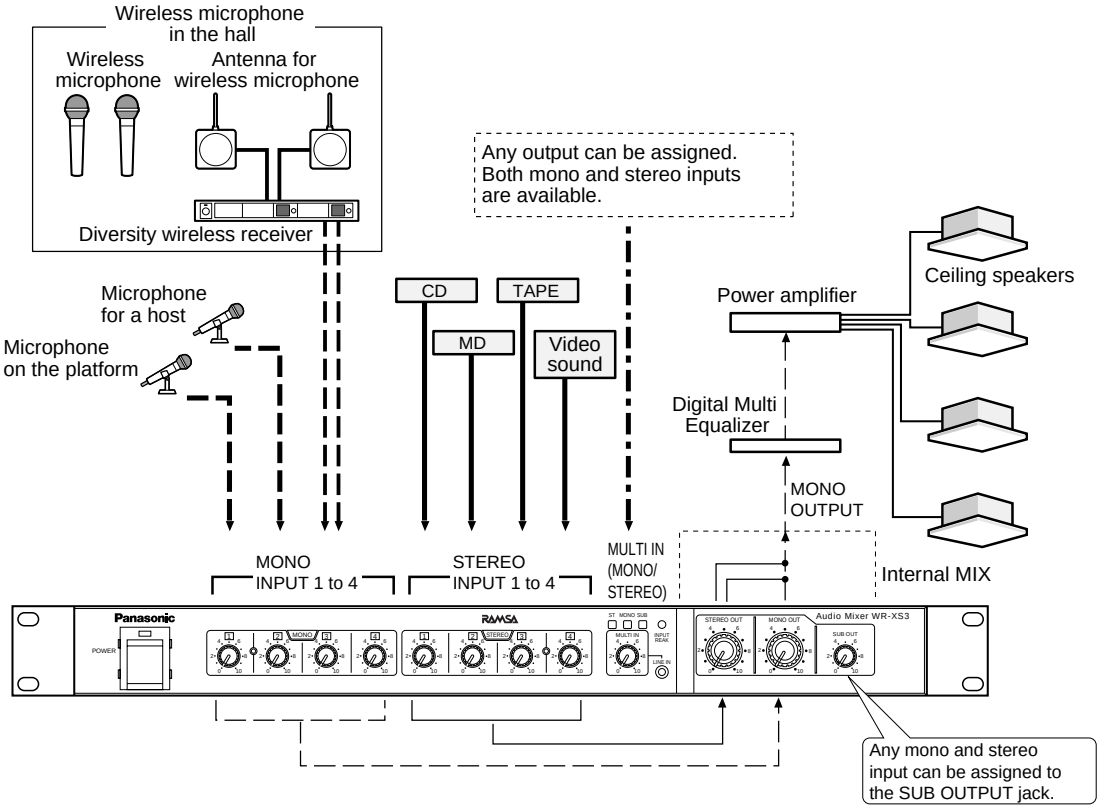
To adjust the output levels

Mono and stereo outputs are individually adjustable.
In the case shown in the figure, the volume of microphones is adjusted with the MONO OUT knob and that of stereo source devices is adjusted with the STEREO OUT knob.

Mono amplification

The signals from stereo or mono inputs are mixed and output through the MONO OUTPUT jack toward one zone.

Signal Flow

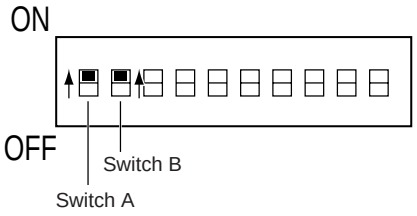


To adjust the output levels

Mono and stereo outputs are individually adjustable.
In the case shown in the figure, the volume of microphones is adjusted with the MONO OUT knob and that of stereo source devices is adjusted with STEREO OUT knob.

DIP switch setting

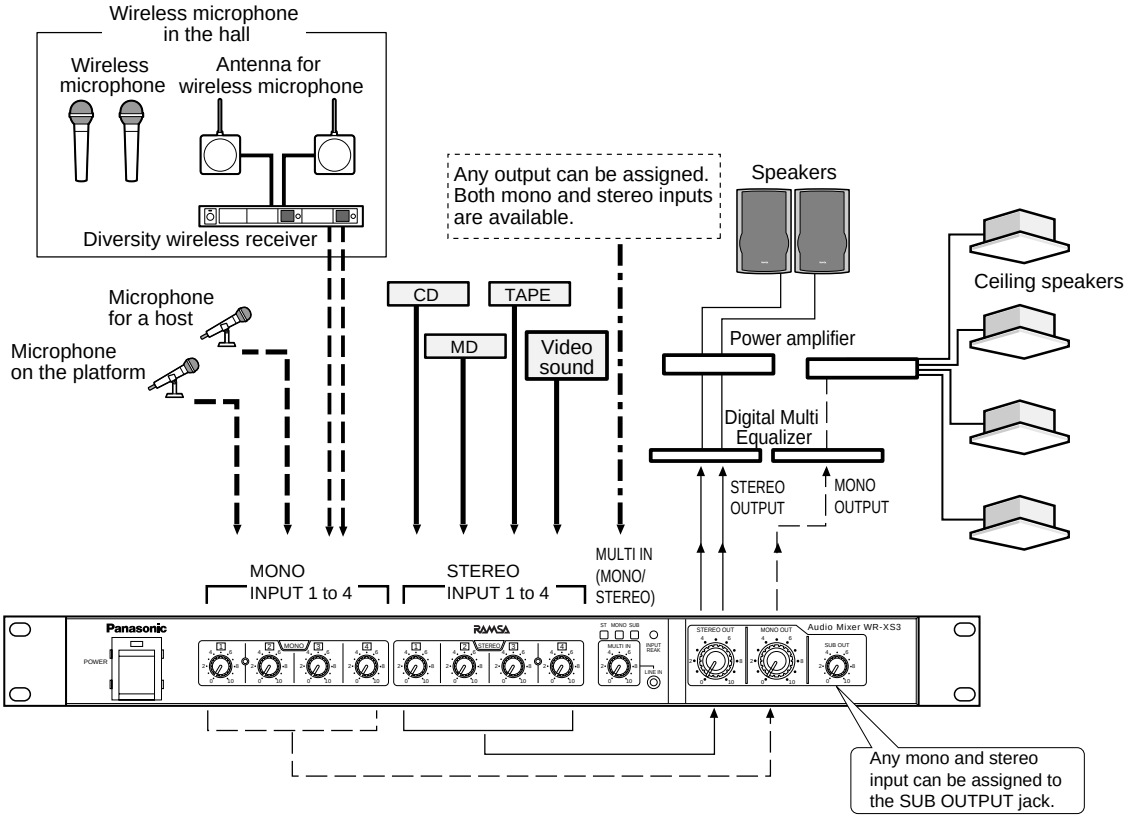
Switches A and B are set to ON.



● Mode 2

The stereo input signals are output through the STEREO OUTPUT jack, and mono input signals are output through MONO OUTPUT jack.
BGM is output from the main speakers with stereo amplification, and microphone sounds are output from the ceiling speakers with monaural amplification.

Signal Flow

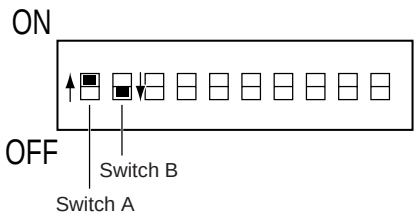


To adjust the output levels

Mono and stereo outputs are individually adjustable.
In the case shown in the figure, the volume of microphones is adjusted with the MONO OUT knob and that of stereo source devices is adjusted with the STEREO OUT knob.

DIP switch setting

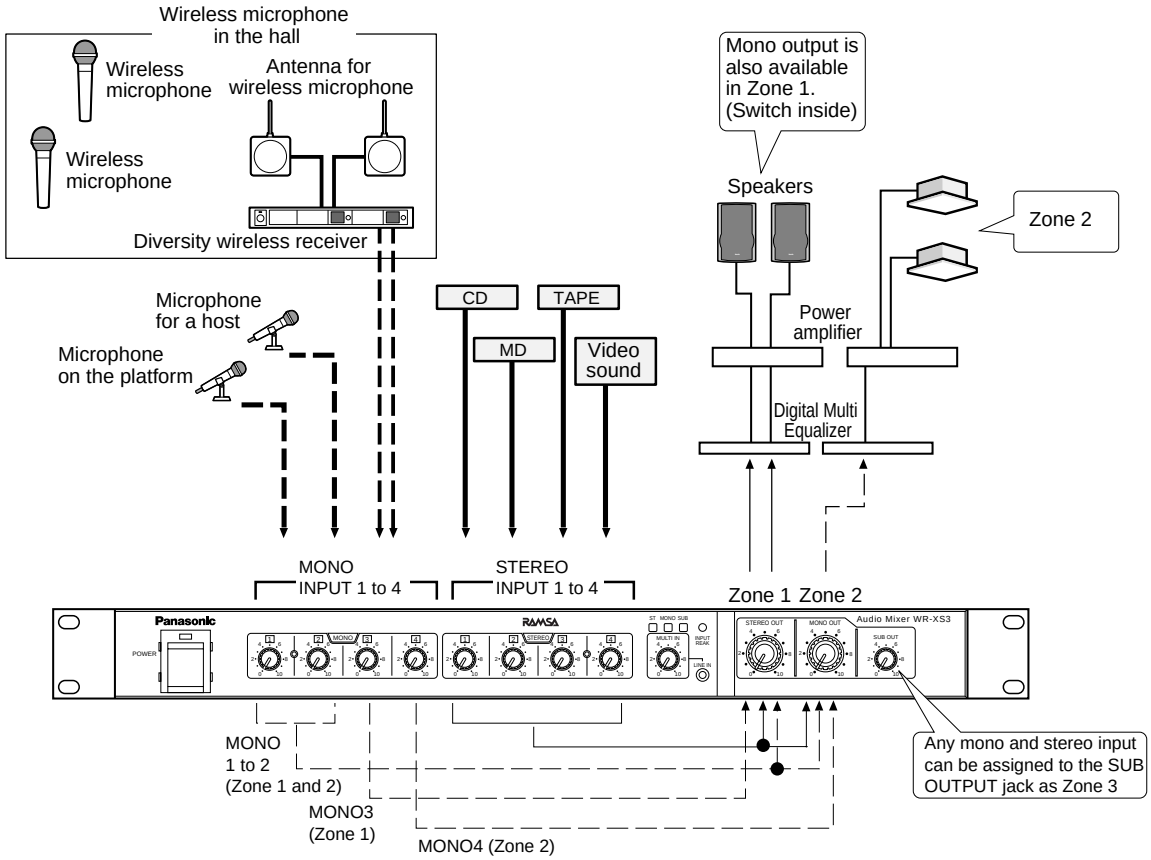
Switch A is set to ON and Switch B is set to OFF.



● Mode 3

The signals from stereo or mono input lines are separately output through the STEREO OUTPUT, MONO OUTPUT and SUB OUTPUT jack. For example, this connection is used for zone amplification in a shop.

- The signals from the MONO INPUT 1 and 2 connectors are output through the STEREO OUTPUT and MONO OUTPUT jacks. (Input for all-call broadcasting in any zone)
- The signals from the MONO INPUT 3 connector are output through the STEREO OUTPUT jack (Zone 1) and the signals from MONO INPUT 4 connector are output through the MONO OUTPUT jack (Zone 2). (Input for broadcasting in each zone)
- The signals from the STEREO INPUT 1 to 4 jacks are output through the STEREO OUTPUT (Zone 1) and MONO OUTPUT (Zone 2) jack.
- Amplification in other areas is possible by assigning another BGM to the SUB OUTPUT jack and mixing with all-call broadcasting.
- The signals from the MULTI INPUT ST jack or MULTI INPUT MONO connector are output to the STEREO OUTPUT, MONO OUTPUT and SUB OUTPUT jacks.*
  *The output line is assigned with the assign button setting. (Refer to p. 19.)



To adjust the output levels

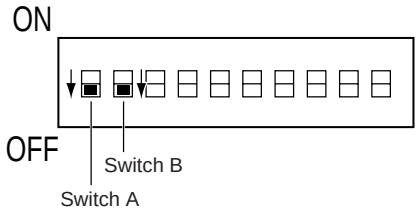
Requires setting of an internal switch.
In the case shown in the figure, the volume of Zone 1 is adjusted with the STEREO OUT knob ,and that of Zone 2 is adjusted with the MONO OUT knob.

To output the mono mix signal (the same signal through the STEREO OUTPUT jack)

The internal switch setting is necessary.
Refer to a service manual procurable in your area.

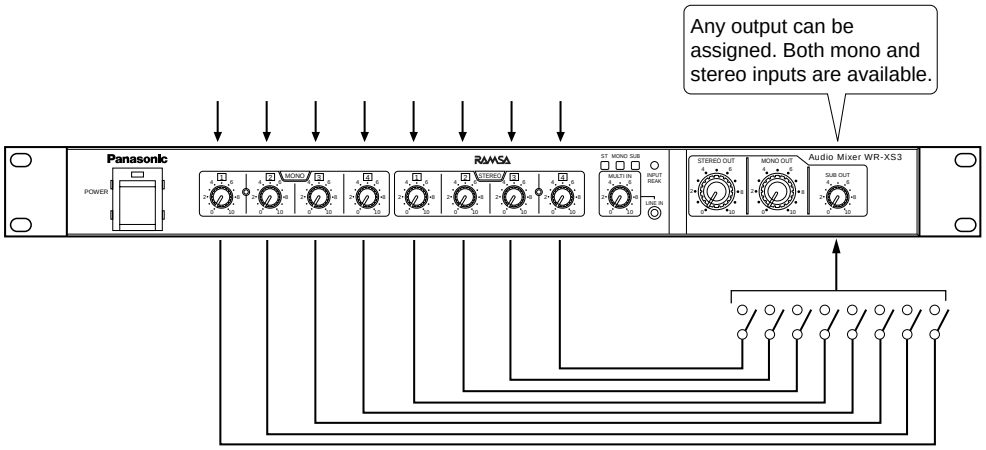
DIP switch setting

Switches A and B are set to OFF.



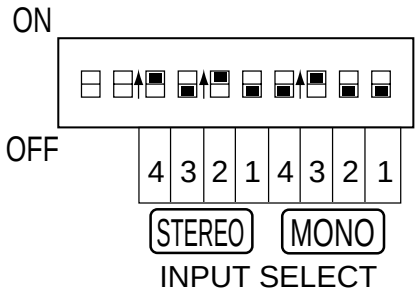
■ Input Line Setting for SUB OUTPUT

The SUB OUTPUT jack at the rear panel can output any signal from the STEREO INPUT 1 to 4 jacks or MONO INPUT 1 to 4 connectors. The output setting is determined with the DIP switch setting.
The input signal from the LINE IN jack, MULTI INPUT ST jacks or MULTI INPUT MONO is also assignable to the SUB OUTPUT jack. The output setting is determined with the assign button setting at the front panel. Refer to p. 19.



● DIP switch setting

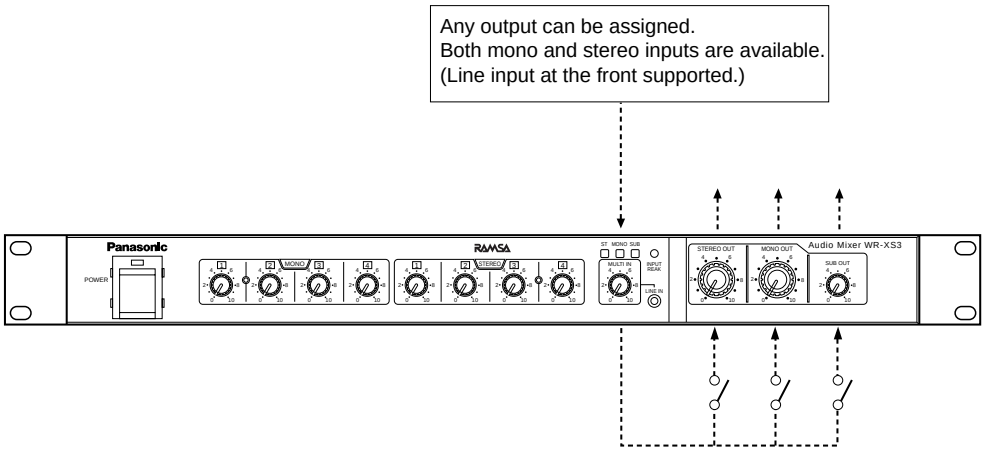
The input line is assigned to the SUB OUTPUT jack by setting Switches MONO 1 to 4 and STEREO 1 to 4.
When all DIP switches are set to ON, the associated input signal is assigned to the SUB OUTPUT jack.
More than one input line is selectable.



The figure shows an example that assigns the MONO INPUT 3 connector, STEREO INPUT 2 jack, and STEREO INPUT 4 jack to the SUB OUTPUT jack.

■ Output Line Setting for MULTI IN/LINE IN

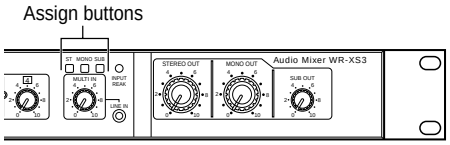
The signal from the MULTI IN ST jacks and MULTI IN MONO connector at the rear panel can be output through any of the STEREO OUT, MONO OUT and SUB OUTPUT jacks The output connector is assigned with the assign switches at the front panel.
The LINE IN jack at the front panel is also usable as a multiple input connector.



● Assign button setting

The output line is assigned to the MULTI INPUT ST jacks, the MULTI INPUT MONO connector or the LINE IN jack with an assign button setting.
Press the ST, MONO or SUB button at the front panel.

The details of button setting are described in the tables below.



Jack	Assign button setting	
MULTI INPUT MONO	MONO or SUB	MONO is recommended when a microphone is connected to this jack in Mode 1 or 2. The level is adjustable together with other microphones by the MONO OUT knob.
MULTI INPUT STEREO	ST	When an external device is connected to this jack in Mode 1 or 2, the level is adjustable together with other devices by STEREO OUT knob.

Suitable levels for the MULTI IN knob

Jack	Device	Level
MULTI IN STEREO	CD/MD player	5 to 8
	Cassette player and cable broadcasting	8 to 9
MULTI IN MONO	Microphone	8 to 10
LINE IN	Portable MD/CD player	8 to 9
	PC sound output	7 to 9

When using the MULTI INPUT ST jacks (or MONO connector) and LINE IN jack at the same time

In this case, the signal from the MULTI INPUT ST jacks will not be output.
The signal is mixed inside the unit and output through the assigned output connector.

Notes:

- Do not use the MULTI INPUT ST jacks and MULTI INPUT MONO connector at the same time. The MULTI IN knob is not adjustable, as each multiple input level is different.
- Mono and stereo input signals are mixed inside the unit. When you do not want to have the mono input mixed, you need to change the internal switch setting.
  Refer to a service manual procurable in your area.

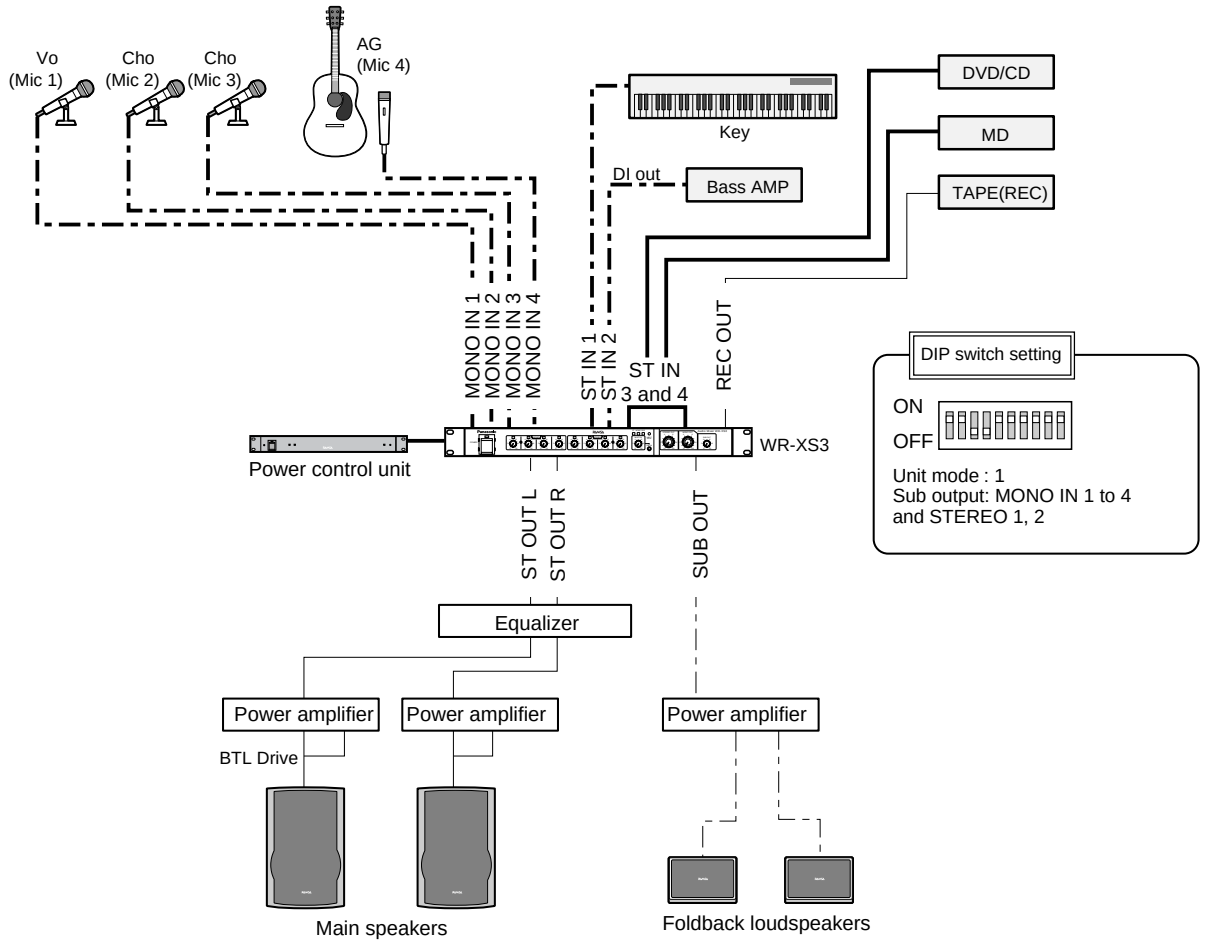
To adjust the output levels

The input signal from the MULTI INPUT ST jacks (or MULTI INPUT MONO connector) is mixed by the unit, then it is output through the output line.
The output line is selectable with the assign button setting at the front panel.

- Adjust the output level with the STEREO OUT knob when the STEREO OUTPUT jack is assigned to the MULTI INPUT ST jacks (or MULTI INPUT MONO connector).
- Adjust the output level with the MONO OUT knob when the MONO OUTPUT jack is assigned to the MULTI INPUT ST jacks (or MULTI INPUT MONO connector).
- Adjust the output level with the SUB OUT knob when the SUB OUTPUT jack is assigned to the MULTI INPUT ST jacks (or MULTI INPUT MONO connector).

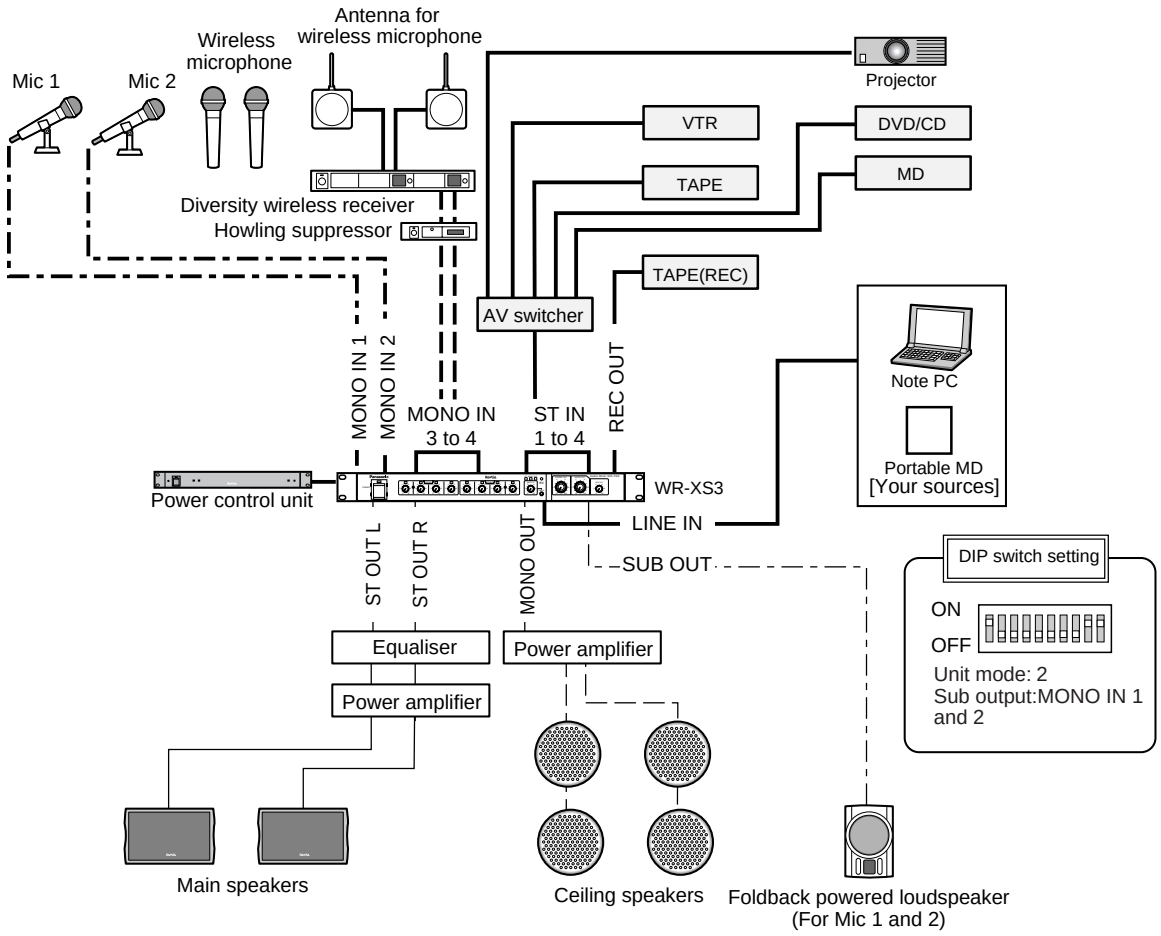
CONNECTION EXAMPLES

■ Example 1: Home Party (Mode 1)



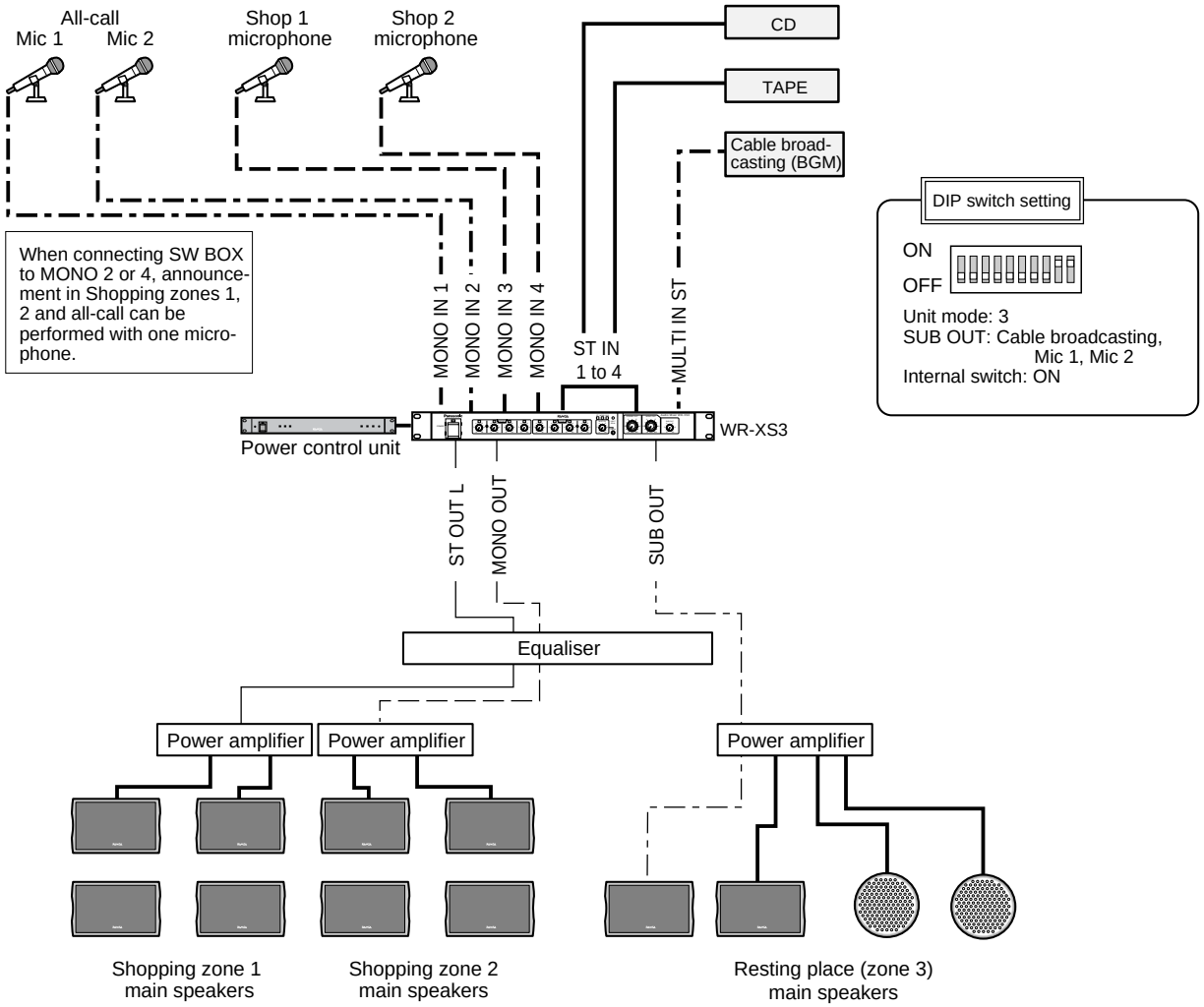
- Set the DIP switches to Mode 1. (Refer to p. 15.).
- Mic 1 to 4 (MONO IN 1 to 4), Key (ST IN 1), Bass AMP (ST IN 2) and DVD/CD/MD (ST IN 3 and 4) are mixed to be output to the main speakers (ST OUT L/R).
- The power amplifier adjusts the output level of sound sources you want to confirm. These are then output to the foldback loudspeakers (SUB OUT).
- Recording is available through REC OUT when connecting a tape recorder or MD recorder to ST IN 3 and 4.

■ Example 2: Presentation Room (Mode 2)



- Set the DIP switches to Mode 2. (Refer to p. 16.).
- This connection raises the howling margin. BGM (ST IN) is output through ST OUT L/R to the main speakers. Sounds from microphones (MONO IN 1 and 2) and wireless microphones (MONO IN 3 and 4) are output to ceiling speakers (MONO OUT).
- Your presentation sources can be input from the front panel's LINE IN to be mixed through an AV switcher (ST IN 1 to 4).
- Sounds from Mic 1 and 2 (MONO IN 1 and 2) can be output to the foldback loudspeaker (SUB OUT).

■ Example 3: Shop (Mode 3)



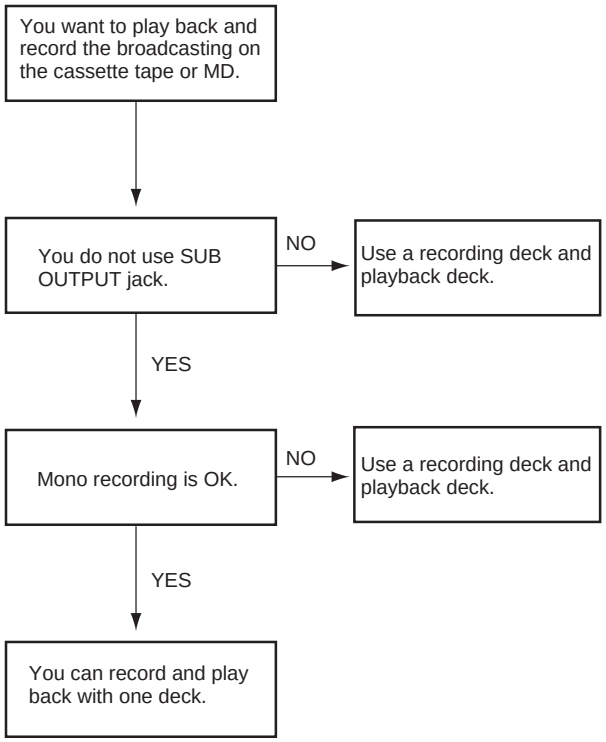
- Set the DIP switches to Mode 3 (refer to p. 17) to form a three-zone amplification system.
- The amplification system is composed of Shopping zones 1, 2 and Resting place (Zone 3).
- The cable broadcasting connects the MULTI IN ST jacks and output to the main speakers (SUB OUT) in the resting place. Another BGM (CD or TAPE) connects ST IN 1 to 4 and output to the main speakers in Shopping zone 1 and 2 (ST OUT L and MONO OUT).
- All-call amplification is also available in the resting place. Mic 1 or 2 (MONO IN 1 and 2) is output to the main speakers (SUB OUT).

RECORDER CONNECTIONS

When you connect a cassette tape recorder or MD recorder to record the broadcasting, confirm the following:

■ Notice about Recorder Connections

Howling can occur depending on the connection form or connected devices. Connect the recording devices either of the following ways:


You want to play back and record the broadcasting on the cassette tape or MD.
You do not use SUB OUTPUT jack.
NO
Use a recording deck and playback deck.
YES
Mono recording is OK.
NO
Use a recording deck and playback deck.
YES
You can record and play back with one deck.

● When Using a Recording-only and a Playback-only Decks

The unit 's REC OUT will be used for the recording output line.

- Connect the unit's REC OUT with the recording deck's REC IN.
- Connect the unit' s STEREO INPUT or MULTI INPUT ST jacks with the playback deck's stereo output connector.

● When Recording and Playing Back with One Deck

The unit' s SUB OUTPUT jack will be used for the recording output line.

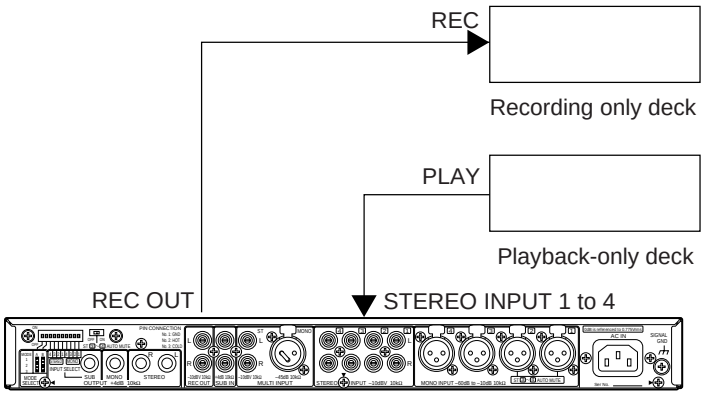
- Set the DIP switch of the assigned input line to ON.
- Connect the unit' s SUB OUTPUT and the recorder's recording output connector with a recommended type of cable. (Refer to p. 13 for details on cable information.)
- Connect the unit' s STEREO INPUT, MULTI INPUT ST or LINE IN jack(s) and the output connector of the playback deck.

Note: This connection implements monaural recording, as stereo input signals are mono mixed to be output through SUB OUTPUT jack.

■ Using a Recording-only and a Playback-only Decks

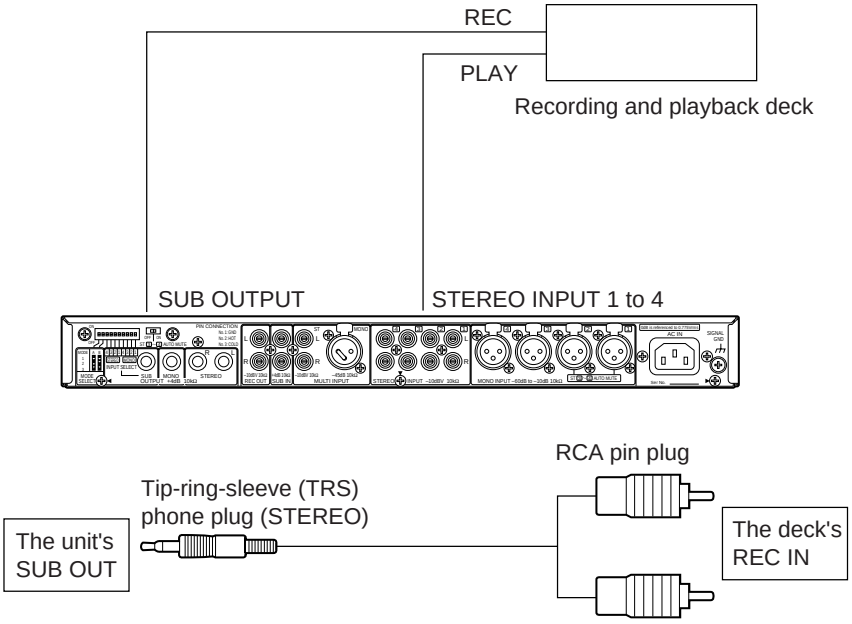
A recording-only and a playback-only decks are used.

1. Connect the playback-only deck to the STEREO INPUT 1 to 4 jacks or the MULTI INPUT ST jack.
2. Connect the recording-only deck to the REC OUT jack.



■ Recording and Playback with One Deck

To record and play back a broadcast with one deck, connect the SUB OUTPUT jack to cut the feedback.
Then set the DIP switch associated with the MULTI INPUT ST jacks to OFF.



Note: Use the cable shown in the figure to connect the unit SUB OUT and the deck's REC OUT.

To output either mono or stereo signal through REC OUT

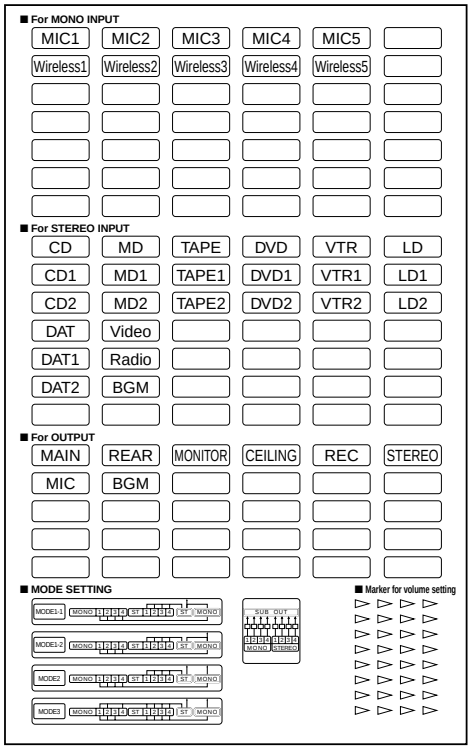
The stereo and mono recording input signals are usually mixed through the REC OUT jack.
The internal switch setting is necessary if you want to output either of them.
Refer to a service manual procurable in your area.

STICKING LABELS

After the connection and settings, stick the supplied labels on the front panel of the unit.
The labels indicate the following:

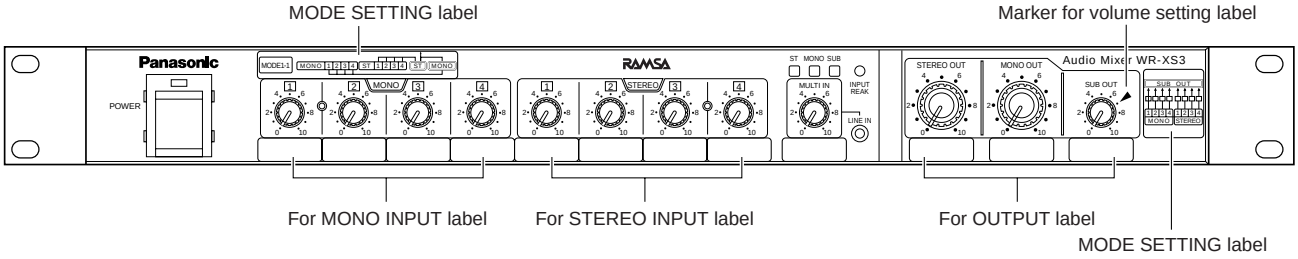
- Name and level setting of each knob
- Mode setting
- Input line assigned to the SUB OUTPUT jack

■ Label


■ For MONO INPUT
MIC1 MIC2 MIC3 MIC4 MIC5
Wireless1 Wireless2 Wireless3 Wireless4 Wireless5
■ For STEREO INPUT
CD MD TAPE DVD VTR LD
CD1 MD1 TAPE1 DVD1 VTR1 LD1
CD2 MD2 TAPE2 DVD2 VTR2 LD2
DAT Video
DAT1 Radio
DAT2 BGM
■ For OUTPUT
MAIN REAR MONITOR CEILING REC STEREO
MIC BGM
■ MODE SETTING
■ Marker for volume setting

■ Where to Stick Labels

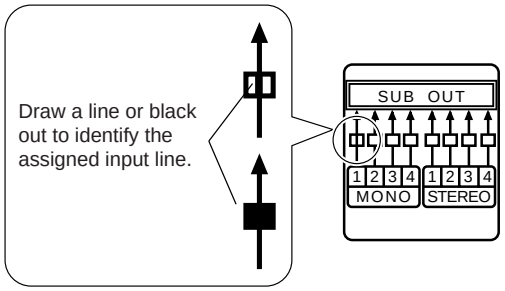
Stick the corresponding label in the corresponding position as shown in the figure.
Each label will be used as follows:



For MONO INPUT, For STEREO INPUT: for input line indication
For OUTPUT: for output line indication
MODE SETTING label: for setting mode indication
Marker for volume setting label: for volume level indication

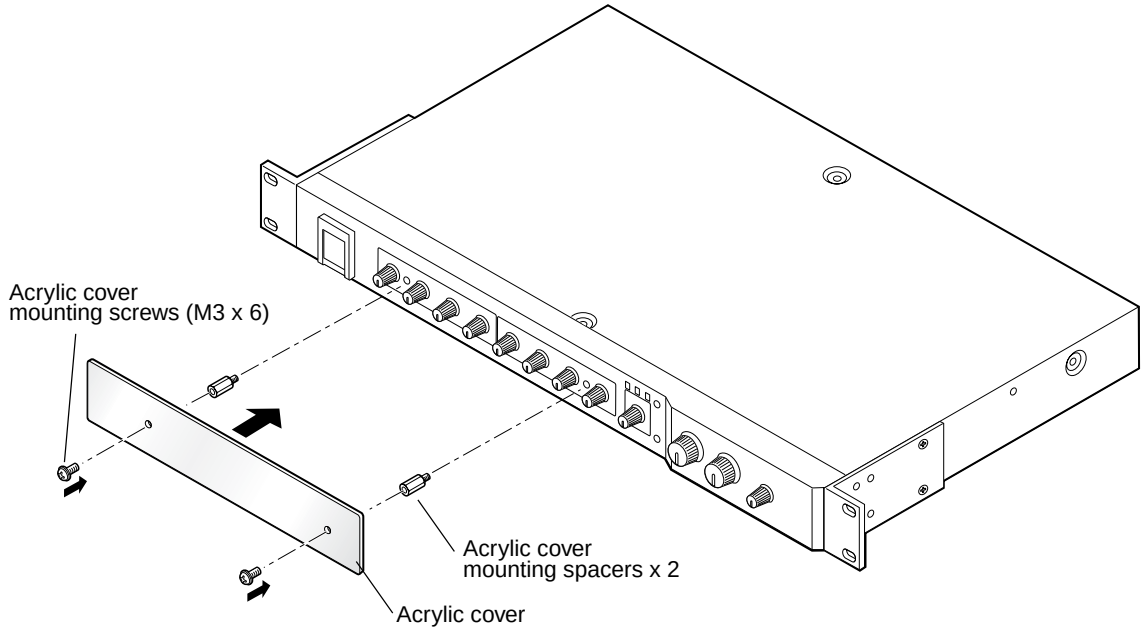
■ Indication of Input Line Assigned to SUB OUT

Draw a line between SUB OUT and the assigned input connector, or black out the square.
The assigned input line will be identifiable.



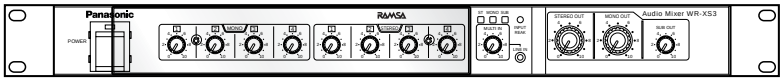
ATTACHING/DETACHING THE ACRYLIC COVER

The input levels need to be adjusted before using the unit. After the adjustments, attaching the supplied acrylic cover with mounting spacers and screws can prevent the wrong operation of input levels.

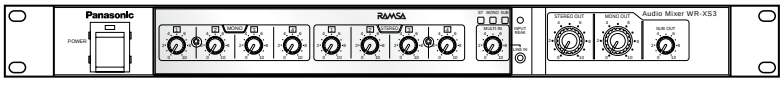


The acrylic cover protects the different range of input level controls depending on the direction in which it is installed.

● The MULTI IN knob is adjustable.



● The MULTI IN knob is not adjustable.



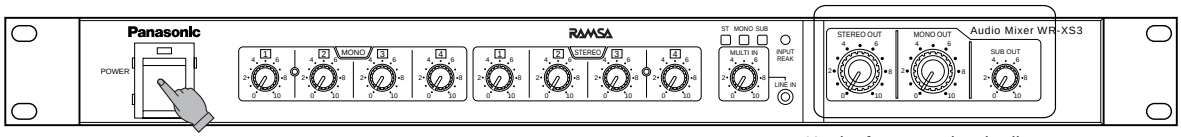
OPERATIONS

■ Basic Operation

This section describes basic operation. All setup items and connections must be completed in advance.
The switches located under the acrylic cover normally do not need to be accessed for operation. Access is required only to the switches outside the acrylic cover.
Confirm that the connections of all the devices and all set modes and input/output levels are correct.

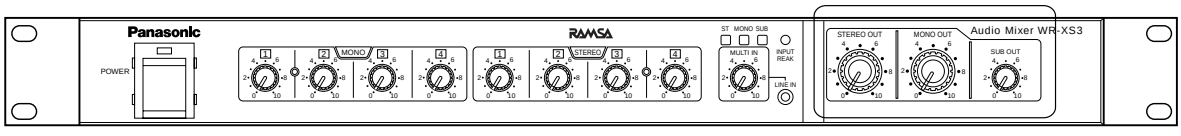
Note: Set the STEREO OUT, MONO OUT and SUB OUT knob to “0” before operation.

1. Press the power switch on the front.
   This turns on the unit and the power indicator.



Knobs for output level adjustments

2. Speak into a microphone or play back an external device such as a CD player.
3. Increase the level of the STEREO OUT, MONO OUT or SUB OUT knob gradually from 0.



Knobs for output level adjustments

   Sound comes from the speakers.
   "7" is the desired volume level.
4. Turn off the power amplifiers.
5. Press the power switch of the unit. The unit and the power indicator turn off.
6. Turn off the external devices.

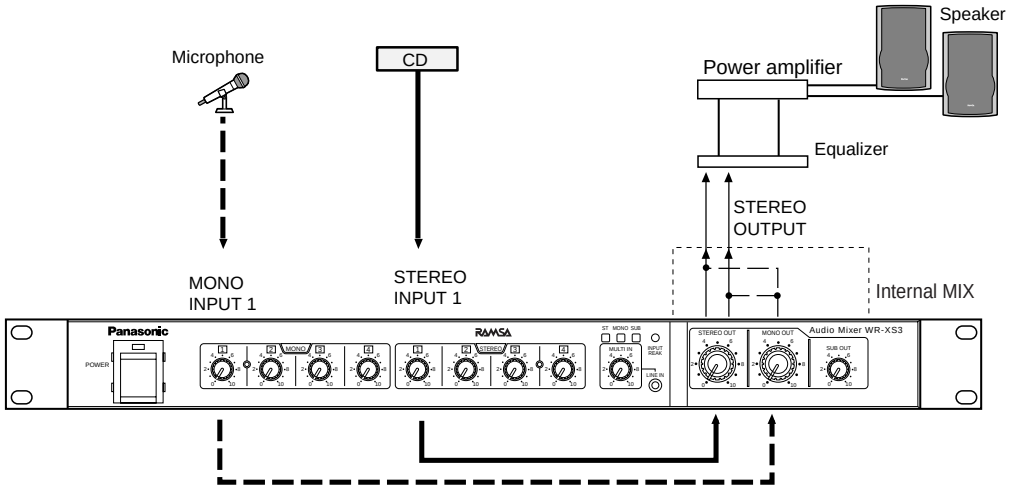
Notes:

- In Mode 1 (refer to p. 21) or 2 (refer to p. 22), the volume of BGM is adjustable with the STEREO OUT knob, and that of microphones is adjustable with the MONO OUT knob.
- In Mode 3 (refer to p. 23), the volume of Zone 1 is adjustable with the STEREO OUT knob, and that of Zone 2 is adjustable with the MONO OUT knob.
- When one of the STEREO INPUT 1 to 4 jacks or MONO INPUT 1 to 4 connectors is assigned to the SUB OUTPUT jack, the output level is adjustable with the SUB OUT knob.

■ Input Level Adjustment

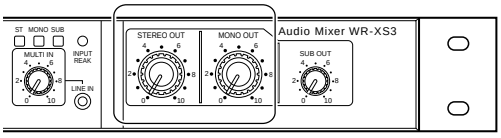
This section describes how to adjust input levels.
The figure describes an example.

- Mode 1
- The microphone is connected to the MONO INPUT 1 connector and the CD player is connected to the STEREO INPUT 1 jack.
- The input signal of the MONO INPUT 1 connector and the STEREO INPUT 1 jack are mixed inside the unit, and amplified through the STEREO OUTPUT jack.



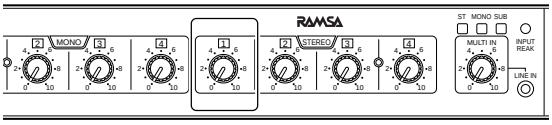
Note: Detach the acrylic cover before the level adjustment. (Refer to p. 28 ATTACHING/DETACHING THE ACRYLIC COVER.)

1. Decrease the attenuator level to ∞.
2. Increase the level of the STEREO OUT and MONO OUT knobs to 7.



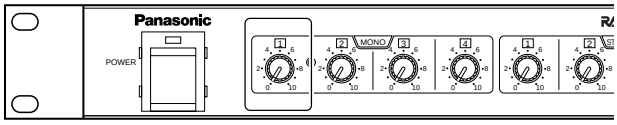
Knobs for output level adjustments
(STEREO OUT/MONO OUT)

3. Connect a CD player to the STEREO INPUT 1 jacks to play back a CD.
4. Increase the level of the STEREO 1 knob gradually from 0.



Knob for input level adjustment
(STEREO 1)

5. Adjust the attenuator to the proper level.
6. Connect a microphone to the MONO INPUT 1 connector and speak into it.
7. Increase the level of MONO 1 knob while speaking into the microphone.
   Refer to the knob's figure in p. 8 for the desired level setting.



Knob for input level adjustment
(MONO1)

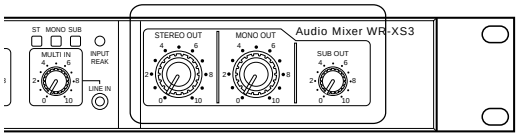
Notes:

- Set the STEREO 1 knob to the level at which the input peak indicator does not light up.
- Set the output level of the diversity wireless receiver to – 20 dB and that of the MONO 1 knob when using a wireless microphone. 3 to 5 is the desired level.
- Adjust the attenuator level if the microphone sound volume is too low even when the MONO 1 knob is set to 10 or if it is too high even when the MONO 1 knob is set to 1.
- The desired levels of the STEREO 1 knob are as follows.
  CD/MD player: 5 to 7
  Cassette player or cable broadcasting: 8 to 9
- The desired levels of the MONO 1 knob are as follows.
  Big voice: 4 to 8
  Small voice: 8 to 10

■ Using CD/MD Player through LINE IN

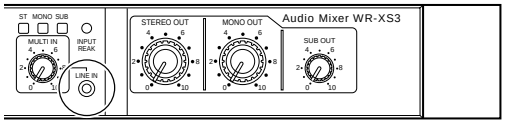
This section describes amplification when a CD player or MD player, etc. is connected to the LINE IN jack at the front panel.

1. Set the LINE IN jack's output level knob to 0.

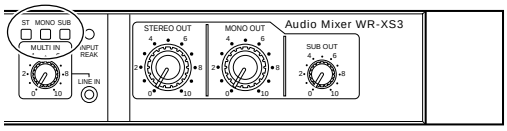


Knobs for output level adjustments

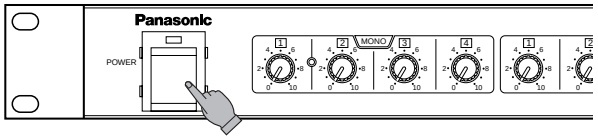
2. Connect the CD/MD player etc. to the LINE IN jack.



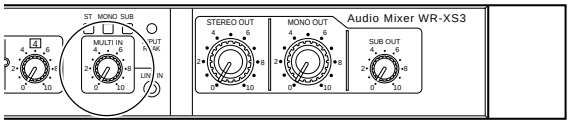
3. Press the ST, MONO or SUB button to assign an output line to the LINE IN jack.



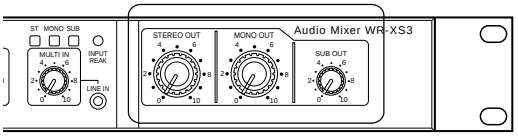
4. Press the POWER switch to turn on the power.



5. Play back an external device such as a CD/MD player, etc.
6. Increase the input level with MULTI IN knob gradually from 0. When the INPUT PEAK indicator lights up, decrease the level, as it has reached -3 dB over the clip level.



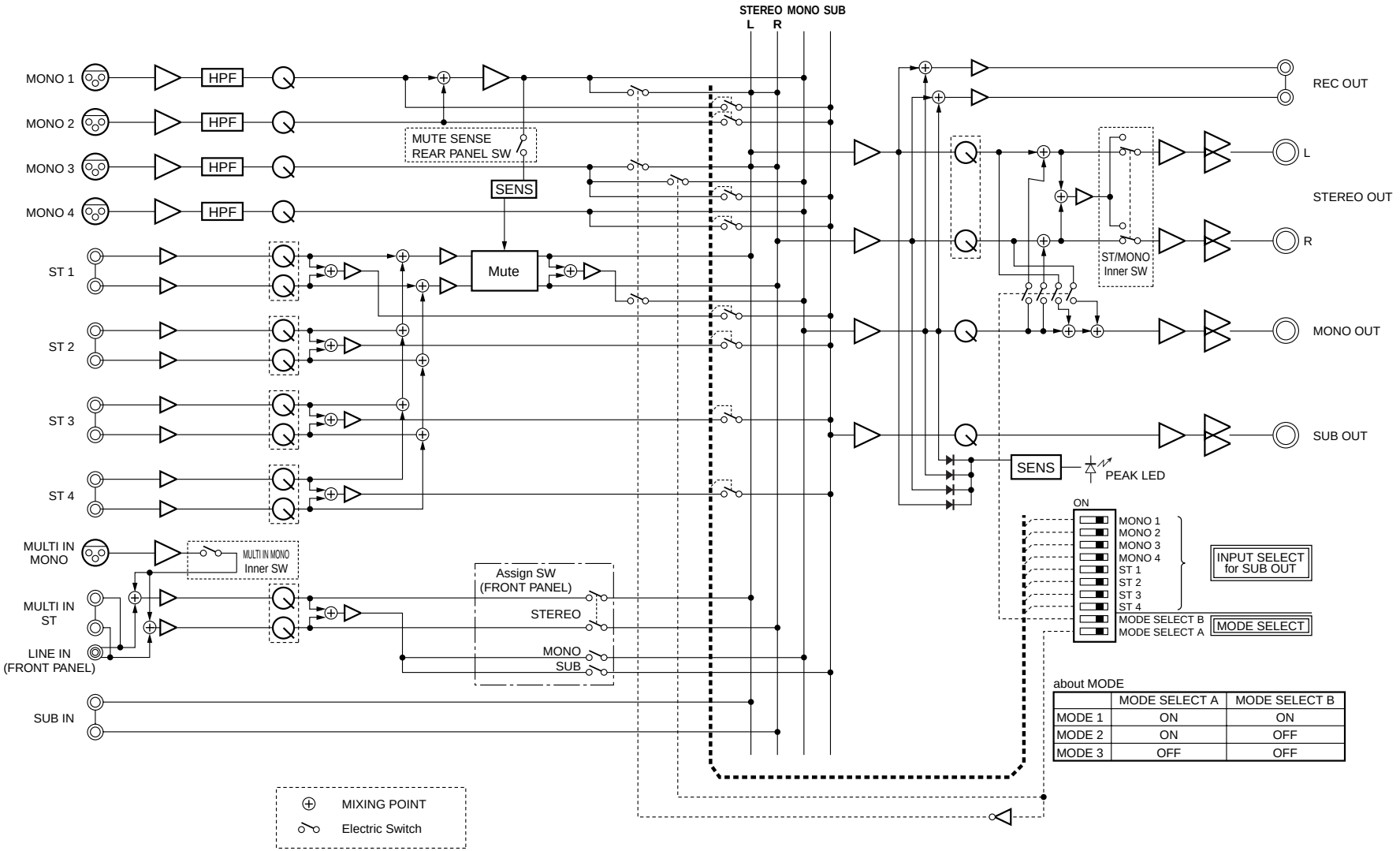
7. Adjust the output level with the knob (ST, MONO or SUB OUT) of the assigned output line.



Knobs for output level adjustments

Notes:

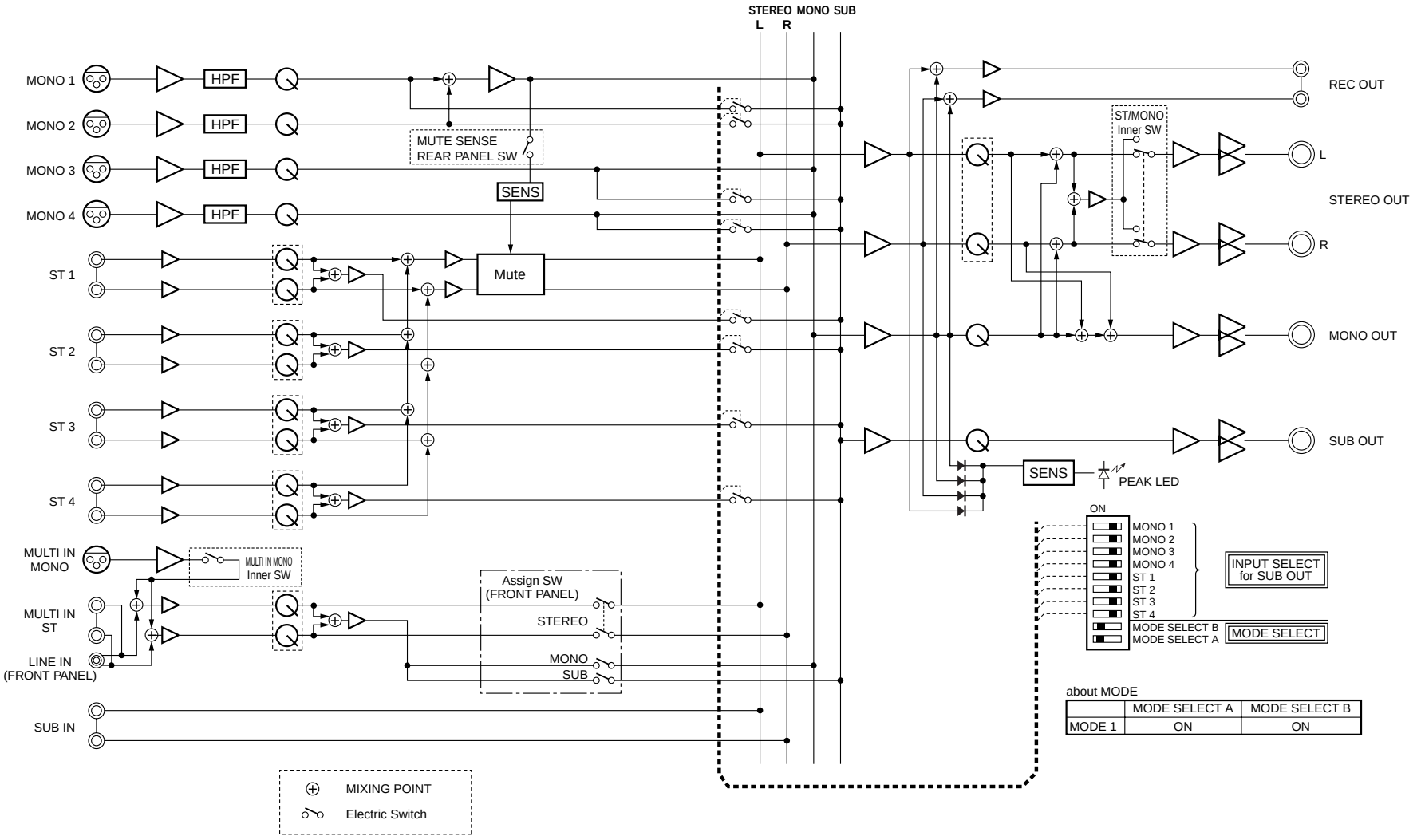
- Set the output level of the CD/MD player to the maximum.
- The desired levels of the output line are as follows.
  Portable CD/MD player: 8 to 9
  PC sound output: 8 to 9



about MODE

	MODE SELECT A	MODE SELECT B
MODE 1	ON	ON
MODE 2	ON	OFF
MODE 3	OFF	OFF

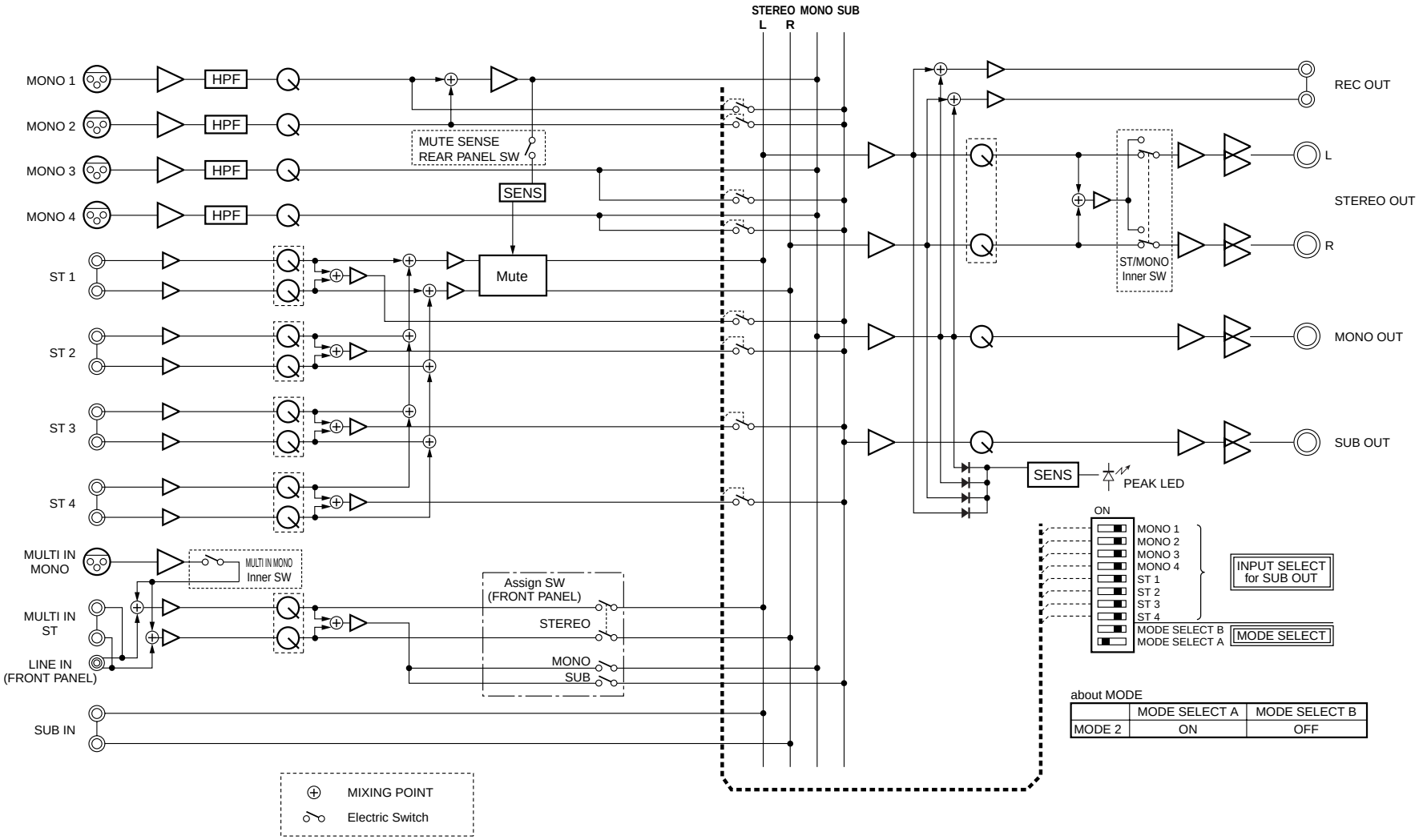
■ MODE1



about MODE

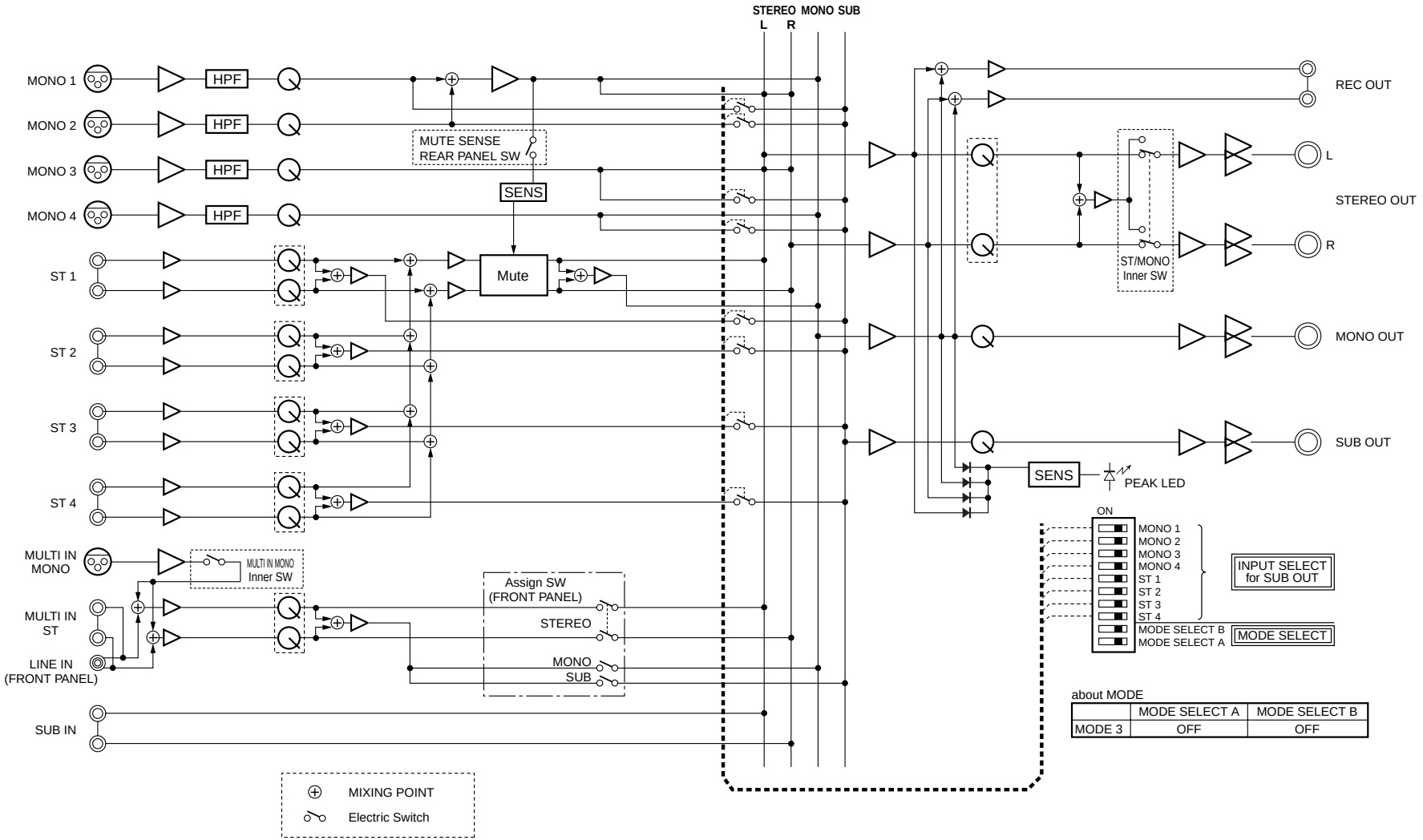
	MODE SELECT A	MODE SELECT B
MODE 1	ON	ON

■ MODE 2



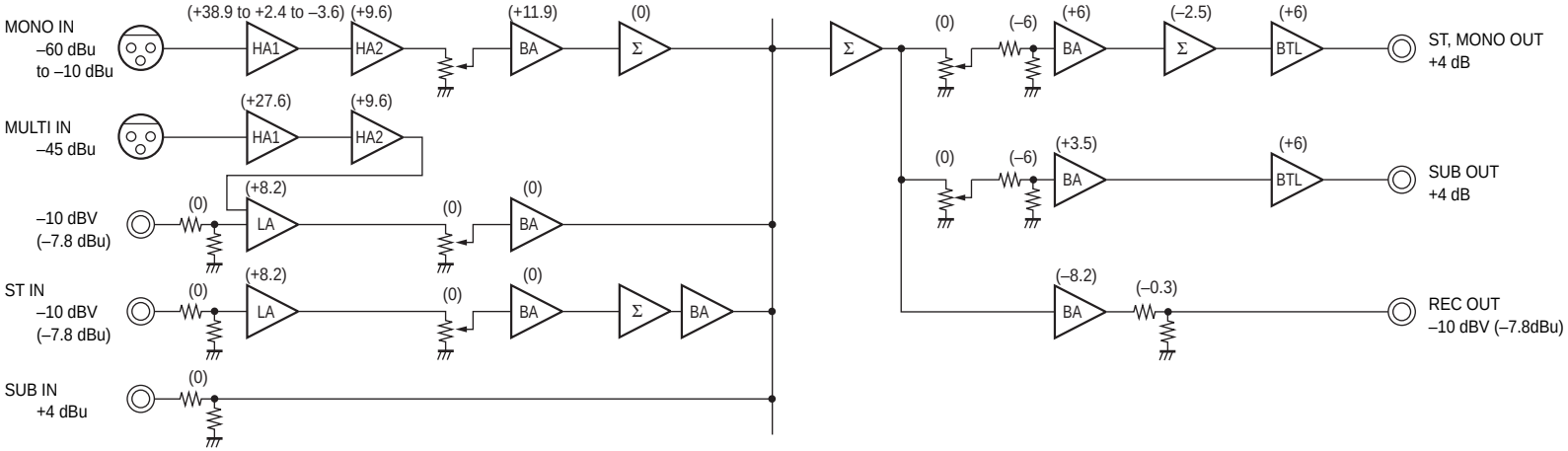
about MODE

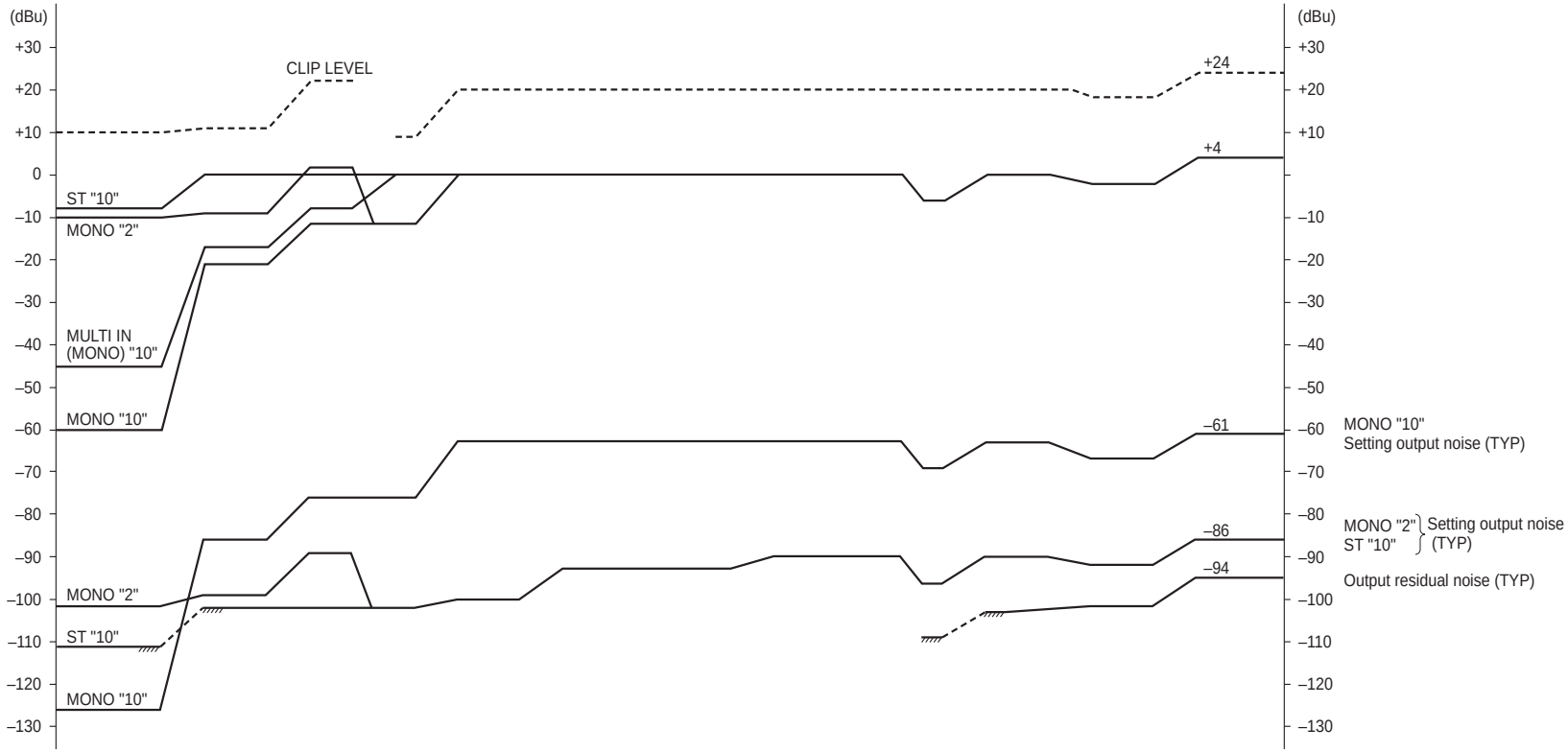
	MODE SELECT A	MODE SELECT B
MODE 2	ON	OFF



about MODE

	MODE SELECT A	MODE SELECT B
MODE 3	OFF	OFF


MONO IN
–60 dBu
to –10 dBu
MULTI IN
–45 dBu
–10 dBV
(–7.8 dBu)
ST IN
–10 dBV
(–7.8 dBu)
SUB IN
+4 dBu
HA1
HA2
LA
BA
Σ
BTL
(+38.9 to +2.4 to –3.6)
(+9.6)
(+11.9)
(0)
(+27.6)
(+8.2)
(–6)
(+6)
(–2.5)
(+3.5)
(–8.2)
(–0.3)
ST, MONO OUT
+4 dB
SUB OUT
+4 dB
REC OUT
–10 dBV (–7.8dBu)


(dBu)
+30
+20
+10
0
–10
–20
–30
–40
–50
–60
–70
–80
–90
–100
–110
–120
–130
CLIP LEVEL
+24
+4
ST "10"
MONO "2"
MULTI IN
(MONO) "10"
MONO "10"
–61
–86
–94
MONO "2"
ST "10"
MONO "10"
MONO "10"
Setting output noise (TYP)
MONO "2"
ST "10"
Setting output noise
(TYP)
Output residual noise (TYP)

TROUBLESHOOTING

Check to see the following before request for repair.
If a trouble can not be removed even after checking and trying remedy, contact your dealer.

Trouble	Check item	Remedy
Power does not turn on.	Is the power cord connected between the inlet socket of this unit and AC receptacle?	Connect the power cord between the power socket of this unit and AC receptacle.
No sound is heard from the speakers connected to SUB OUTPUT.	Is the DIP switch of the assigned input line set to OFF?	Set the DIP switch of the assigned input line to ON. (Refer to p. 18)
No sound is heard from the device connected to MULTI IN .	Are all assign buttons set to OFF (▀) or a wrong assign button is set to ON (▂)?	Press the assign button for the proper input line. (Refer to p. 8 or p. 19)
No sound is heard from the device assigned to MULTI INPUT ST jack.	Is a CD/MD player connected to LINE IN at the front panel? The signals from the MULTI INPUT ST jacks, MULTI INPUT MONO connector and LINE IN jack are not available at the same time.	Disconnect the CD/MD player from LINE IN.
The volume of the stereo input line is unstable.	Is the ST 1- 4 AUTO MUTE switch set to ON?	Set the ST 1- 4 AUTO MUTE switch to OFF.
No sound from an input line is heard when Mode 1 is selected.	The levels of stereo (mono) output lines are adjusted with the STEREO (MONO) OUT knob. Is the level of the knob set to 0?	Adjust the level of the STEREO (MONO) OUT knob.
The power cord insulation is damaged.		The power cord, plug and connectors are worn out. This may result in electric shock or a fire. Unplug the unit from the receptacle immediately and refer to qualified service personnel.
The power cord, plug and connectors get hot during the use.		The power cord, plug and connectors are worn out. This may result in electric shock or a fire. Unplug the unit from the receptacle immediately and refer to qualified service personnel.
The power cord gets heat when bent or stretched.		The power cord, plug and connectors are worn out. This may result in electric shock or a fire. Unplug the unit from the receptacle immediately and refer to qualified service personnel.

SPECIFICATIONS

● Basic Specifications

Power supply	120 V AC, 60 Hz or 220 V to 240 V AC, 50 Hz*
Power consumption	10 W
Temperature range	0 °C - +45 °C (32 °F - 113 °F)
Dimensions	480 mm (W) x 44 mm (H) x 250 mm (D) [16-15/16" (W) 1-3/4" (D) x 9-7/8"] (when shipped, excluding projections such as knobs)
Weight	Approx. 3.4 kg (7.5 lbs.)
Frequency response	20 Hz to 20 kHz +0 dB/–0.5 dB (stereo input) 300 Hz to 20 kHz +0 dB/–0.5 dB (mono input, sensitivity + 60 dBu)
High-pass filter	20 Hz to 20 kHz (included in all mono inputs)
Total harmonic distortion	0.1 % or less (at mono input)
Input conversion noise	–126 dB or less (source impedance 150 Ω or less, audio band 22.4 Hz - 22.4 kHz)
Residual noise	–94 dB or less (status where the knobs of all volumes and fader levels are turned down as far as possible, audio band 22.4 Hz to 22.4 kHz)
Maximum input	+12.2 dB or more (stereo input) +10 dB or more (mono input, when microphone is selected)
Maximum output	+24 dB or more (main output, sub output)
Crosstalk	–80 dB or less, 1 kHz (between adjacent channels)
Common mode rejection ratio	70 dB or more, 1 kHz (mono input, at –60 dB of sensitivity)
Maximum voltage gain	11.8 dB or more (stereo input) 64 dB or more, 1 kHz (mono input, when microphone is selected)

● Input Circuit

Mono inputs 1 to 4	–60 dBu, 10 kΩ, balanced, mono input, four circuits, XLR
Stereo inputs 1 to 4	–10 dBV (–7.8 dBu), 10 kΩ, unbalanced, stereo input (L/R), four circuits, pin
Multi input (mono)	–45 dBu, 10 kΩ, balanced, mono input, one circuit, XLR
Multi input (stereo)	–10 dBV, (–7.8 dBu), 10 kΩ, unbalanced, stereo input (L/R), one circuit, ø3.5 mm (1/8") stereo mini (front panel)
Sub input	+4 dBu, 10 kΩ, unbalanced, stereo input (L/R), one circuit, RCA

● Output Circuit

Stereo output	+4 dBu, 10 kΩ, electronically balanced, stereo output (L/R), one circuit, TRS
Mono output	+4 dBu, 10 kΩ, electronically balanced, mono output, one circuit, TRS
Sub output	+4 dBu, 10 kΩ, electronically balanced, mono output, one circuit, TRS
Recording output	–10 dBV, 10 kΩ, unbalanced, stereo output (L/R), one circuit, pin

* Power supply is not switchable but conformed to your area.

STANDARD ACCESSORIES

Rack mounting screws (M5 x 12) ..... 4 pcs.
Rubber feet ..... 4 pcs.
Acrylic cover ..... 1 pc.
Acrylic cover mounting screws (M3 x 6)..... 2 pcs.
Acrylic cover mounting spacers ..... 2 pcs.
Label ..... 1 pc.
Operating Instructions (this book) ..... 1 pc.
AC power cord ..... 1 pc.
Guarantee (U.S.A. and Canada only).....1 pc.

(For U.S.A. and Canada)

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